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Scholarship in Medicine

Scholarship is a kinetic condition which thrives best in an atmosphere of inquiry, investigation and exploration. It is nurtured on books and journals. Scholarship requires reading over a wide range of topics and texts. The narrow fields of specialism are consonant with scholarship, but he who restricts himself to such narrow fields is not a scholar. The scholar projects his interests, studies and investigations in all directions beyond the boundaries of his specialty.

Scholarship can be developed in the classroom, in the library, in the laboratory, in the clinic, in the practitioner's office. It is stimulated by leadership and the influence of other scholars, but scholarship cannot be passively absorbed. Its attainment requires work, study, denial of diverting calls hither and yon, resistance to the distractions and seductions of ephemeral pleasures.

The primal foundation of scholarship in medicine lies in work, diligent, absorbing, persistent work. He who does not work long hours cannot attain scholarship. The laggard and the lazy never become scholars. In one of his essays Osler said "I propose to tell you the secret of life as I have seen the game played, and as I have tried to play it myself. . . . I propose to give you the master word in the hope, yes, the full assurance, that some of you at least will lay hold upon it to your profit. . . . It is the open sesame to every portal, the great equalizer in the world, the true philosopher's stone which transmutes all the base metal of humanity into gold. The stupid man among you it will make bright, the bright man brilliant and the brilliant student steady. With the magic word in your heart all things are possible, and without it all study is vanity and vexation. The miracles of life are with it; the blind see by touch, the deaf hear with eyes, the dumb speak with fingers. To the youth it brings hope, to the middle aged confidence, to the aged repose. . . . It is directly responsible for all advances in medicine during the past twenty-five centuries. Laying hold upon it, Hippocrates made observation and science the warp and woof of our art. Galen so read its meaning that fifteen centuries stopped thinking and slept until awakened by the De Fabrica of Vesalius, which is the very incarnation of the master word. With its inspiration Harvey gave an impulse which we feel today. Hunter sounded all its heights and depths and stands out in our history as one of the great examplars of its virtues. With it Virchow smote the rock, and the waters of progress gushed out, while in the hands of Pasteur it proved a very talisman to open to us a new heaven in medicine and a new earth in surgery. Not only has it been the touchstone of progress, but it is the measure of success in everyday life. Not a man before you but is beholden to it for his position here, while he who addressed you has that honor directly in consequence of having had it graven on his heart when he was as you are today. And the master word is Work, a little one, but fraught with momentous consequences if you can but write it on the tables of your heart and bind it upon your forehead."

If the master word, Work, is the key to unlock the way to scholarship in medicine, it must be applied in large measure in reading. If the primal foundation of scholarship lies in work, then much of the structure of scholarship above the foundation is to be built of bricks gathered from the writings of men of the medical profession. In printed pages will be found the records of the work of the past necessary to the scholarship of the present. Reading is a habit which, once cultivated, continues and is one of the roads toward scholarship for each to follow

Condensation of an address by Dr. Henry A. Christian, Hersey professor of the theory and practice of physic emeritus, Harvard University, presented at the installation of a chapter of Alpha Omega Alpha in Tufts College Medical School, Boston, published in the Pharos of Alpha Omega Alpha, December 1940 and in the Diplomate January 1942.

and lined with innumerable pleasant impressions. The medical student should spend part of each day in reading. The student reads mostly in textbooks, but he should read also in current journals. For the medical student to be set the task of reading up some topic and making a report with bibliographic references is an excellent first step toward scholarship. The habit of going once a week to the library to browse over journals, reading titles, the names of authors and their place of work, dipping here and there into articles, reading the authors' conclusions, all of this is stimulating. The most effective textbook reading is to peruse the description of some disease suffered by a patient seen by you a short time previously; here you compare your personal observations with those of the author of the book; the clinical case helps to fix in your mind the textbook discussion of the disease; you have begun in this way to acquire clinical experience in relation to the understanding of a disease. Soon you will be turning automatically to systems of medicine and to journal articles to satisfy your longing for more extensive knowledge. This is the form of reading which is most helpful too after your school days are over, to read in connection with the patient recently seen in home and office.

I have been watching young men develop progressively in the clinic for years. I am convinced that those who read most extensively progress with greatest success in the profession. Those that go farthest, with few exceptions, began early to buy books and journals and to read them. A personal medical library is a valuable asset. The book right at hand is the book useful and actually used. The busier you become in medical work, the greater the importance to have books at hand in which to look for information about the problems of the day's work.

The habit of reading at least one hour daily will enable you to cover an amazing amount of medical literature. If you do this, each year you will have spent fifteen and one-half eight hour days in reading. I advise you to begin and to continue this habit. The more diligently and more extensively you read, the more you enjoy it. For him who attains scholarship the labor of reading long since has changed to a pleasure and satisfaction. There is often suggested as an excuse for not doing extensive and broadly distributed reading the plaint that so much is published that no one can read it all. The last is true, but multiplication of publication but increases the number of pages that will be useful to you in the solution of your individual medical problems. Only the lazy would excuse delinquency in reading by saying that too much is written. For the industrious, still it is possible to read widely and so develop what I consider a broad scholarship in medicine. To read much in the immediate field of one's special interest is necessary to success, but to me this is not true scholarship in medicine.

To the master word, Work, and to reading should be added investigation. To study some problem, some group of patients, in order to know more of that subject than others is another significant road to scholarship. For the medical man investigation should be part and parcel of the method of study of each patient. Every patient should be regarded as a problem on whose solution depends diagnosis and wise treatment. Thus he should use daily the methods of the investigator and so accumulate clinical data which may become useful in widening the fields of medical knowledge. Even such simple observations can carry the stimulus and satisfaction that comes to the more matured and skilled investigator. I advise every young medical man to undertake some form of sustained investigation. Attend medical meetings and contribute to them observations based on your own studies. A paper prepared for the local society will teach much of value to you.

The medical man needs a religion of some sort with which to help his sorely afflicted patients and with which to meet his own problems. Scholarship without a faith lacks in perfection and often fails in its utility. In another address Osler said: "Some of you will wander through all phases, to come at last, I trust, to the opinion of Cicero, who had rather be mistaken with Plato than be in the right with those who deny altogether the life after death: and this is my own *confessio fidei*." I may add that also it is my own, and in a very simple Faith, throughout life, I have found great solace and what has seemed to me an enrichment and broadening of such scholarship as I may have attained in a life in which the study of medicine has ever been a great joy.

Success in medicine in last analysis always has been based on scholarship, not by any means on erudition, but on that broad scholarship which constitutes knowledge. Medicine ever is changing; to meet the future, no preparation is more important than scholarship whose attainment has been begun early and steadily added

to. In this period of changing economics, of war, what is to happen in the future is known to no man; the unknown will be faced and solved most effectively by those that are best trained in their work. Those who have developed a broad scholarship will be the ones to lead medicine through any chaos that may come and to restore it to its proper place in the solutions of the problems of health and of disease. The practical value of scholarship in medicine will be that it will bring success to those who diligently cultivate it. I have no skepticism about there being important places in the future, as in the past, for those highly trained in medicine.

Early Medical Education in the United States

In 1765, under the influence of John Morgan and William Shippen, two Edinburgh graduates, Benjamin Franklin's College of Philadelphia (University of Pennsylvania) opened a medical department, the first in the English speaking New World. Three years later, in 1768, Samuel Bard and five associates opened the School of Medicine of King's College in New York City. As soon as the war was over, John Warren, an army surgeon, sold the Harvard Corporation on a plan for a medical school, which opened in 1782. The first of the so-called country schools was founded in 1797 by a Connecticut Valley pioneer, Nathan Smith. It was the Medical School of Dartmouth College in Hanover, N. H. Four schools of medicine, then, were instituted before the close of the eighteenth century.

Any one of the thirty-two collegiate institutions established in the colonies or states by royal charter or legislative act before Jan. 1, 1801 had broad enough charters to confer medical degrees, whether they offered instruction in medicine or not. Indeed, three other institutions did attempt to institute medical departments: William and Mary College, 1779; Queen's College, 1793, and Transylvania University, 1779. The efforts of the first two proved abortive, and the latter was practically stillborn, being revived two decades later. Occasionally, honorary medical degrees were conferred by institutions with and without medical instruction. In all, twelve institutions during the eighteenth century granted three hundred and thirty-five medical degrees of all kinds. Thirty-nine of these were honorary and thirty-three were duplicates; therefore only three hundred and twelve candidates received degrees.

The first decade of the new century saw the opening of two more schools of medicine, the College of Physicians and Surgeons of New York City and the College of Medicine of Maryland, both of which had no collegiate connections but were sponsored and controlled by medical societies. A disastrous precedent was established on Dec. 29, 1812, when the legislature of Maryland responded to a memorial of the president and professors of the College of Medicine of Maryland by passing an act creating the memorialists the body corporate and politic of the so-called Medical Department of the so-called University of Maryland.

With the passing of this act was established the first American proprietary school of medicine. A similar charter was granted to the Castleton Medical Academy. The bond of union between the collegiate institutions and their medical departments was frail enough, at best. Authorizing the establishment of entirely independent faculties of medicine with little or no balance in the way of personally disinterested trustees was a policy that characterized the American system of medical education for a century.

The evils of such a system are obvious. In 1819 there followed a veritable race in the founding of medical schools, which continued unabated until the impact of the Civil War temporarily brought the movement to a halt. Schools sprang up like mushrooms in coastal cities, in interior valleys of the Piedmont and in the expansive trans-Appalachian area from Michigan and Wisconsin to Alabama and Louisiana. Under the impetus of Far Western expansion, the movement reached the Pacific Coast in 1858 with the establishment of the Medical Department of the University of the Pacific.

Much of this rapid development was not complimentary to the American medical profession, but it was an enlightening exhibition of the life and work of professional men, undisciplined within and unregulated from without while they attempted giving medical care to a rapidly expanding democracy in which ingenuity was unhampered and personal liberty was glorified.—Norwood, William F.: A History of Medical Education in the United States Before the Civil War, *Harveian Review*, August 1941.

Medical College News

Medical schools, hospitals and individuals will confer a favor by sending to these headquarters original contributions, reviews and news items for consideration for publication in the Student Section.

Pittsburgh's Medical Students Teach in Defense Program

During the past autumn a committee of faculty members of the University of Pittsburgh worked on a plan to insure the safety of the thousands of persons who populate the campus, the forty story skyscraper "Cathedral of Learning" and other classroom and laboratory buildings. While the program was aimed at any sort of disaster which might strike the institution, the committee worked on two phases of preparation: one, disaster precautions and conduct of individuals; the other, provision for treatment of injuries. In the execution of this second phase Dr. Paul L. McLain and Capt. John P. Cameron of the Department of Military Medicine outlined the following plan:

1. Immediate training of men and women of all four classes of the School of Medicine in first aid teamwork and teaching.

2. Utilization of medical students to train first aid teams, composed of students in the undergraduate departments of the university.

3. Organization of treatment and evacuation stations, staffed by medical students and members of the faculty of medicine.

4. Development of a system of rapid evacuation of wounded to the university hospitals for treatment.

The medical students were divided into two groups under the immediate charge of four men with surgical or military experience. First came preliminary training of a small group of senior and junior students, largely from the advanced course of the medical R. O. T. C. unit. These men subsequently served as demonstrators, under faculty supervision, in the teaching of the larger two groups. Second came the course of training of the two large groups of medical students, consisting of about ten hour and a half sessions. The training of medical students conformed to the procedures of the American Red Cross first aid course. Third came a series of sessions between Christmas holidays and the midyear examinations, devoted to team function, assignment into permanent squads and organization for undergraduate instruction. Only a portion of the trained students are being used initially in the undergraduate program. The others serve as alternates and as a reserve.

At the second semester registration, students in the undergraduate schools of the University were asked to fill in forms listing their abilities and interests in the broad university defense program. At present the course in first aid consists of ten one hour sessions. With three class periods weekly, a course can be taught in three and a half weeks. Eighty men comprise a class; in the future, women's classes will be organized. Following explanation of the day's material, five squads of medical students demonstrate the procedures. After demonstration, the students split into squads and apply the technics under supervision of one of the medical student demonstrators. Each squad of undergraduates has its leader, and each man has specific duties but is required to be familiar with the duties of his fellows. The students soon learn the advantages of efficiency and speed that is developed by the system.

A system of evacuation by student automobiles, university cars and trucks, and ambulances to university hospitals for treatment has been set up. Until the requisite number of undergraduate students have been trained, a group of senior medical students is on twenty-four hour call to the university health service headquarters for emergency duty. As the undergraduates are trained in groups they will take their place in the plan beside the medical students and medical faculty men.

The difficulties in organizing the project have been numerous. Many must be taught in order that a few capable persons may be well trained. It is a source of gratification that the medical students at Pittsburgh have found a contribution which they, with their faculty, may give to national defense before actually entering the service, besides the important one of furthering and completing their professional education.

War Effort of Loyola University School of Medicine

The dean's office submitted the following concerning the war efforts of Loyola University School of Medicine, Chicago:

STUDENT COMMISSIONS

In the freshman class there are eighty-two male students. Of this number sixty-eight, or 83 per cent, have made application for ensign H.-V. (P.) commissions in the Naval Medical Corps. Of the remaining fourteen most are waiting for similar opportunity to apply for Army commissions. It is hoped that this opportunity will be afforded them at an early date under the same scheme as that promulgated by the Navy recently.

In the sophomore class, of a student enrolment of sixty-five male students fifty-two, or 80 per cent, have made formal application and have stood physical examination for ensign H.-V. (P.) commissions. In the remaining thirteen there are at least two who in all probability will have to register under the Procurement and Assignment Act. Others are waiting for similar action by the Army as mentioned under the freshman class.

In the junior class of fifty-one male students twenty-two, or 43 per cent, have completed application for ensign H.-V. (P.) commissions. Two men who applied to the Navy and were rejected have applied for second lieutenancies in the Medical Corps Reserve Pool. Eighteen, or 35 per cent, are commissioned in the Army. Eleven students, or 22 per cent, have for various reasons not made immediate application. The majority of these students delayed action owing to dependencies and physical disabilities.

In the senior class of sixty-two male students nineteen, or 30 per cent, have completed application for ensign commissions. A total of twenty-four applied, five of whom were rejected, mostly on the basis of vision. All these men have since applied for Army commissions. Thirty-one seniors, or 50 per cent of the class, have completed application for Army commissions. One senior has been rejected by both services. One senior has applied to the Public Health Service. One is an alien and one is ineligible because of postinfantile deformity. There are only nine seniors who have not yet completed application in either service.

The entire student body to date is, therefore, 61 per cent Navy and 19 per cent Army, and only 19 per cent have not taken action. The student body, therefore, has enrolled 80 per cent in the service. This per-

centage is constantly increasing as more and more students are coming to the dean's office for counsel in the matter of application and choice of branch of service.

FACULTY

To date eighteen faculty men have been called to active service. There has been a rumor that one member of the faculty was killed in action in the Philippines. One alumnus was killed at Pearl Harbor with the Navy, and there is semiofficial information that a second was killed at Cavite in the service of the U. S. Navy.

SELECTIVE SERVICE

The medical school has participated by the examination of selectees in the medical school building. Since the service began last June more than eight hundred selectees have been examined at the medical school for various local draft boards.

Western Reserve Goes on Continuous Session Plan

The dean of Western Reserve University School of Medicine, Cleveland, Dr. Torald Sollmann, writes that this school will go on the continuous session plan for all classes, beginning this June, and that the entering class is being enrolled on this basis.

Johns Hopkins to Hold Summer Sessions

The Johns Hopkins University Medical School, Baltimore, has decided to shorten the course of study for medical students for the duration of the war by holding summer sessions. The new academic year now will begin June 1, 1942 for the three upper classes and later in June for the incoming class and will end in February 1943. There will be a short vacation probably at the end of July. The Johns Hopkins Hospital has not as yet made any definite changes in its internship dates.

Classes Six Days a Week

In accordance with the new arrangement adopted by the Indiana University administrative council, medical students at that school will do in fourteen weeks the amount of work that has been done heretofore in eighteen weeks. The medical students will attend classes six days a week and the only vacations in the near future will be Good Friday, July 3-4 and Thanksgiving Day. The semester beginning February 16 will end May 10; the semester beginning May 12 will close August 22, and the first semester of next fall starting September 3 will continue until December 23. The medical faculty, which is composed chiefly of physicians serving part time without pay, has agreed to teach overtime despite the additional pressure that it will make on their private practice. The next entering class will comprise an additional number of students to a total of one hundred and twenty-eight members.

Vanderbilt Goes on Twelve Month Basis

Dr. W. S. Leathers, dean, is reported to have announced on December 19 that, to help meet the situation created by the war, Vanderbilt University School of Medicine, Nashville, will eliminate the usual summer vacations in order that medical students may complete the four year course of study in three years. Under this plan the first year students will begin their courses next July instead of next autumn, and students already enrolled will forego summer vacations in order to hasten their graduation.

Five New York Schools Go on Three Year Plan

The five medical schools in New York—Columbia University College of Physicians and Surgeons, Cornell University Medical College, New York University College of Medicine, New York Medical College and Fifth Avenue Hospital and Long Island College of Medicine—have arranged to accelerate their courses so that the usual four years of work can be accomplished in three years by making the courses practically continuous throughout the year with only short vacations between terms. The new arrangement is a cooperative effort to aid the government in providing sufficient doctors of medicine for the military services and at the same time see that a sufficient number is available to care for the civilian population. The five New York medical schools normally would graduate about 1,350 physicians in a three year period, but under the accelerated schedule this number will be increased to about 1,800 in the same period.

Minnesota Goes on Twelve Month Basis

At their meeting, January 2, the Executive Faculty of the University of Minnesota Medical School, Minneapolis, decided, subject to the approval of the Board of Regents, to:

1. Increase the enrolment in the freshman class to 125.

2. Accelerate the medical course by starting the next class at the beginning of the summer session and by omitting summer vacations, so that a student will graduate from the medical school in three calendar years after his admission. This will result in making available to the armed forces an increased number of physicians and will make them available from three to twelve months earlier than if the present schedule were continued. The accelerated curriculum and increased enrolment will be discontinued at the end of the war.

3. Discontinue comprehensive examinations during the war. Under the present system of comprehensive examinations a student who fails to pass them in the spring may take them again in the fall and, if he passes, go on without loss of time. Elimination of vacations would make it necessary for a student who failed in his examinations to wait at least nine months before going on with the work of the next year. For that reason they are being replaced by course examinations.

4. Instal a new junior-senior curriculum which spreads the lectures ordinarily concentrated in the junior year and the clinical work ordinarily concentrated during the senior year more evenly over the two years. This is intended to be permanent.

Defense Bond Campaign

Phi Delta Epsilon, national medical fraternity, has launched a campaign to sell U. S. Defense Bonds by mail to its 3,500 graduate members. The idea originated in the success of selling defense bonds at the recent national convention of the fraternity in New York City, where under the direction of Mrs. Rosalie Wolf, the wife of a physician, $20,000 worth of bonds and stamps were sold simply by asking every one as he left the registration desk to buy them. Phi Delta Epsilon will use the group plan provided through the New York office of the Defense Savings Division, under which envelopes are addressed in the office of the group but material is sent out through the Defense Savings Office, where the records of pledges and payments are kept.

Columbia Students Take First Aid Courses

All medical students are taking the American Red Cross standard first aid course so that they may be prepared to be of service during an air raid and to participate in instruction of lay groups. Members of the senior class have been organized to assume definite responsibilities at the Columbia-Presbyterian Medical Center during an emergency. These students will work in cooperation with the Catastrophe Unit of the Medical Center.

First Aid Courses Compulsory

The University of Oklahoma School of Medicine, Oklahoma City, announces that beginning with the second semester of the present scholastic year an obligatory course in first aid for all seniors in the medical school was inaugurated. The school also arranged for an elective course in tropical medicine open to seniors and juniors.

Defense Stamp "Favors" for Student Dance

Wayne University, Detroit, announced that souvenir "favors" for the "University J-Hop" this year were related to the war effort. Each person attending the dance received a defense stamp book with one 25 cent stamp already mounted. The dance was held at the Masonic Temple Ballroom January 16.

Interns Sponsor Victory Carnival

The intern staff and the personnel at the Bronx Hospital, New York, sponsored a Victory Carnival and Dance, February 12, for the primary purpose of raising funds for Medical Aid for the Allies. Each person attending was given a ticket on a raffle of a $25 defense bond. The ticket, costing 25 cents, was also the ticket of admission to the carnival.

Defense Stamps as Gifts at Christmas Party

The traditional annual Christmas party at Oklahoma University School of Medicine, Oklahoma City, was highly successful this year. Each one in attendance was given a present in the form of a defense stamp book, with just a "starter" in the corner.

Chairman of Student War Activities

Russell Lennox, a senior in Wayne University's College of Liberal Arts, Detroit, has been named chairman of Wayne's Student War Activities Committee to direct civilian defense participation of students in the various colleges and schools during the remainder of the school year. Other members of the committee and their assignments are: Louis McGuiness, "Blood Donors Day"; Betty Pickering, Victory Book Campaign; Barbara Berman, forum discussions on current problems; Shirley Williams, women's projects; Jack Barthwell, exhibits, and Harvey Barnett and Mabel Hamilton, Defense Stamp Sale.

Graduation in February

The commencement of Louisiana State University School of Medicine was held in New Orleans, February 18, at the Municipal Auditorium, at which time Chauncey S. Boucher, chancellor of the University of Nebraska, was the guest speaker. His subject was "Education in the Emergency." A reception was held in the afternoon for the members of the graduating class and their families, and all departments of the school, as well as the Charity Hospital, were open for the guests.

Harvard Medical School

Harvard Medical School was opened as a branch of Harvard University in Cambridge, Mass., in 1782. The school was moved to Boston in 1810. The five white buildings on Longwood Avenue, now the home of Harvard Medical School, were opened in 1906. The laboratory buildings designated in the picture as *B, C, D* and *E* are constructed on the same general plan, each consisting of two parallel wings united at the front by an amphitheater with a seating capacity of two hundred and fifty. The departments of anatomy, histology and embryology are in building *B,* the departments of physiology, physical chemistry and biochemistry and experimental surgery are in building *C,* the departments of bacteriology, pathology and preventive medicine are in building *D* and the departments of pharmacology, legal medicine and comparative pathology and tropical medicine are in building *E.* The dormitory for medical students, Vanderbilt Hall *(F)* is immediately adjacent to the medical school buildings. A description of Vanderbilt Hall was published in the news columns of THE JOURNAL on Feb. 4, 1928, about the time it was dedicated. Previous to 1906 the clinical teaching was done mostly in the Massachusetts General Hospital and Boston City Hospitals, which are still used for teaching purposes. Other more recently built hospitals adjacent to or in the vicinity of the medical school have added greatly to the teaching facilities. Each student comes in intimate contact, under supervison, with patients in these hospitals, beginning in the second half of the second year and increasing until the fourth year, when the students serve as clinical clerks and give their whole time to the study of patients.

Massachusetts General Hospital has been associated with Harvard Medical School ever since the hospital was founded in 1821, and 439 of its 838 beds are available for teaching purposes, together with outpatient departments, to which 323,039 visits by patients were made last year. Of the 2,509 beds in the Boston City Hospital, 1,593 are available to the teaching units of Harvard Medical School. The 250 bed Peter Bent Brigham Hospital, which is adjacent to the medical school, has been closely associated with it since the hospital was opened in 1913; all its beds are used for teaching purposes, in addition to the outpatient service. Around the corner from the school on Brookline Avenue is the 215 bed Beth-Israel Hospital, where 120 beds are available for teaching. Nearby on Longwood Avenue is the 283 bed Children's Hospital, with 241 beds available for teaching, and the Infants' Hospital and the House of the Good Samaritan, with 83 beds devoted to patients with rheumatic fever and rheumatic heart disease. Other hospitals with beds available for teaching are the Collis P. Huntington Memorial Hospital and the F. Collins Warren Laboratory, which afford opportunity to study special problems concerning tumors, the New England Deaconess Hospital, where the George F. Baker Clinic is especially equipped for patients with diabetes and the study of that disease, the Palmer Memorial for the special study of cancer and chronic disease, the Middlesex County Sanatorium with 400 beds available for teaching particularly in pulmonary tuberculosis, the Free Hospital for Women, devoted to the surgical treatment of women's diseases, and the Massachusetts Eye and Ear Infirmary, in which 189 beds are used for instruction purposes. Associated with many of these hospitals are research departments and departments especially equipped for the study and treatment of particular

HARVARD MEDICAL SCHOOL

diseases. In the administration building of Harvard Medical School, labeled *A* in the picture, are the Warren Museum, the dean's offices, the faculty room and the joint library of the medical school and the school of public health. Other libraries available to medical students are the famous Boston Medical Library at 8 the Fenway, the Lucien Howe Library of Ophthalmology, the George Burgess McGrath Library of Legal Medicine, the College Library in Cambridge and the Boston Public Library to students who are residents of Boston and to nonresidents who file a bond at the bursar's office.

In the announcement of Harvard Medical School for 1941-1942 an estimate shows that the average cost of the school year is $1,275 for the last three years and $1,450 for the first year, when, in addition to other expenses, a microscope must be bought. This estimate includes tuition, board and room, books, laboratory fees, medical and infirmary fees, laundry and incidentals. The dean's office endeavors to assist students in obtaining part time work during the college year without any charge. However, unless a student can meet the expenses of at least the first year in school it is recommended that he postpone his entrance. Only a limited amount of outside work can be done without being a tax on the student's health and scholarship.

Candidates for admission to the first year class must present satisfactory evidence that their college work and other credentials have been of such character as to give promise of work of high quality in the medical course. On this basis the school considers for admission graduates in arts or in sciences of colleges holding membership in one of the national educational associations. In exceptional cases, applicants without a degree who have completed two or more years of college work may be admitted provided they present certificates showing that they have a scholastic standing placing them in the first third of their class. The entering class is limited to one hundred and twenty-five.

Harvard Medical School has available many scholarships and fellowships which may be granted to students under certain conditions and which will help them to pay at least a portion of their expenses. The school also offers to incoming members of the first year class two or three national scholarships which carry a stipend large enough, if necessary, to meet all the student's essential expenses; successful applicants who maintain a high honor record will continue to hold these scholarships through the medical course. Direct application for the national scholarships cannot be made, since all accepted first year students are considered as candidates, the awards being made without reference to financial circumstances.

Loan funds have been established to which students in need of financial assistance may apply for loans up to $400 during any one year and to a total of $1,000 during the course. The notes are payable two years after graduation, and 5 per cent interest is charged. Such loans are made only to students in the second, third and fourth year classes whose records have been sufficiently creditable to make it probable that they will remain in the school and whose other financial obligations do not make it improbable that this loan will be repaid.

The tutorial system at Harvard Medical School makes it possible for properly qualified students to do extracurricular work throughout their course. Students who because of previous training have a special interest in the medical sciences are encouraged to devote the spare time afforded by the two free afternoons to intensive work on a well defined problem. Not more than 15 per cent of the class is allowed this privilege, and their past records must show that their regular curricular work will not be impaired if they undertake such extracurricular studies.

Duke University

The students and faculty of Duke University School of Medicine, Durham, N. C., were addressed, December 10, by Dr. J. M. McIntosh, professor of public health, University of Glasgow, Scotland, on "The Medical Student in War Times"; January 14, by Mrs. Mary P. Diaz of Puerto Rico on "Occupational Therapy in Puerto Rico"; February 11, by Ralph Linton, professor of anthropology at Columbia University, New York, on "Culture in the Normal Personality," and, November 11, by Dr. Michael Heidelberger of Columbia University College of Physicians and Surgeons on "Recent Advances in the Knowledge of Complement and Its Function." At the beginning of the winter quarter the student body at Duke comprised two hundred and forty-seven students, including one hundred and eleven juniors and seniors.

Guest Students at Columbia from Latin-America

A group of forty-two Latin-American students are visiting Columbia University, New York, for a period of six weeks under the auspices of the Institute of International Education. Included in this group are thirteen recent graduates of medical schools. Arrangements have been made for them to take postgraduate courses and to work in the laboratories of hospitals affiliated with the university during the visit. A number of other Latin-American physicians, including a group of six who are visiting this country under the auspices of the Chilean Government, are also registered for postgraduate courses. An increasing amount of interest in American medical education has been shown by physicians from South America, and during the past year thirty have been registered for postgraduate courses under the faculty of medicine.

Yale Undergraduates on Hospital Duty

Seventy undergraduate students at Yale who intend later to study medicine have volunteered to spend five hours a week in the New Haven Hospital doing numerous humble tasks that will save the time of doctors and nurses, as for example carrying meals to patients, making beds, carrying water and preparing charts. The idea of the "Yale Aides" is said to have originated with Mr. John Heller of Wilton, Conn., a premedical student, now a senior at Yale. It is said that other eastern universities intend to adopt the plan.

Fraternity Activities at Northwestern

According to our Student Section correspondent, the fraternities at Northwestern University Medical School, Chicago, are rapidly adapting their programs to the present emergency. Nu Sigma Nu fraternity is conducting a blood bank donation on the part of the medical student body in support of the war effort. All the fraternities hold frequent informal gatherings at which members of the faculty discuss points of particular interest at this time. The Pi Kappa Epsilon honorary fraternity sponsors student medical society meetings. Nu Sigma Nu gives an annual prize of $100 to the student elected as the outstanding member of the senior class. Five hundred persons attended the annual Ranson Lecture, January 30, given by Phi Beta Pi fraternity, at which the guest speaker was Dr. Russel L. Cecil of New York.

Course in Facial Restoration

Indiana University School of Dentistry, Bloomington, announces the establishment of a course to train dentists in artificial facial restoration in anticipation of increasing facial disfigurements because of the war.

Lectures in Honor of Deceased Faculty Members

A lectureship was recently established at the University of Texas Faculty of Medicine, Galveston, by the Alpha Nu chapter of the Phi Rho Sigma medical fraternity in honor of deceased members of the faculty. The first lectures were given on December 1 before the student body, the faculty and visiting civilian and army physicians by Drs. Rolla E. Dyer, chief of the division of infectious diseases, U. S. Public Health Service, Bethesda, Md., and Russell L. Cecil, New York, who discussed typhus fever and rheumatoid arthritis respectively.

College of Medical Evangelists

The students of the clinical division of the College of Medical Evangelists, Loma Linda, Calif., attended a cardiac clinic at the Los Angeles General Hospital, November 4, conducted by Dr. Paul D. White, Boston. The clinic was sponsored by the Los Angeles Heart Association and was part of the ninth annual symposium on cardiovascular disease.

Ground was broken, October 2, preparatory to the erection of a dormitory for men in the preclinical division of the College of Medical Evangelists. The dean, Dr. Edward H. Risley, was master of ceremonies. This building will complete the quadrangle on the campus of the medical school.

The Circle

The ceremony of presenting keys was held on Dec. 28, 1941 by the Circle, the honor scholastic society, Louisiana State University School of Medicine, New Orleans. The program was opened by Dr. B. I. Burns, dean of the medical school; he introduced the guest speaker, Dr. Edgar Hull, who spoke on the physician as a member of his community. Keys were then presented to the following students elected to the society: Rudolph J. Marshall Jr., Morris Ruchelman, Charles D. Muller Jr., Malter A. Salatich and George Degenshein, all seniors, and to Douglas Lindsey, Norman Burnstein and Dan Becham, members of the junior class. A key was also presented to the honorary member selected by the society, Dr. Urban Maes, and to the one selected as the outstanding alumna, Dr. Emma Moss.

History of a Medical Fraternity

A complete history of the Alpha Kappa Kappa medical fraternity is now running serially in the fraternity's official publication, the *Centaur*, and will be published in book form next summer. The author of the history is Dr. Lee D. Van Antwerp, Meriden, Conn., who is present editor of the *Centaur*.

Elisha Kent Kane Graduated from Pennsylvania

In the Student Section, January 24, page 330, Dr. Richard C. Holcomb, Captain, U. S. Navy, retired, stated that Elisha Kent Kane graduated in medicine from the University of Virginia. Dr. J. J. Horton, formerly past assistant surgeon in the U. S. Navy, writes that Dr. Kane graduated in medicine from the University of Pennsylvania in 1842 and gives as his authority the book "The Life of Dr. Elisha Kent Kane and other Explorers" by Samuel M. Sumeker, A.M., Philadelphia: J. W. Bradley, 48 North Fourth Street, 1859. Dr. Kane spent a year and a half at the University of Virginia, where it seems he studied civil engineering. He had to return home on account of illness and when able to return to school he went to the University of Pennsylvania, where he completed the medical course of studies.

Book Notices

Climate and Man: 1941 Yearbook of Agriculture. United States Department of Agriculture. Cloth. Price, $1.75. Pp. 1,248, with illustrations. Washington, D. C.: Supt. of Doc., Government Printing Office, 1941.

This is an excellently prepared, carefully edited presentation of the part climate has played in the colonization of new regions and of its influence over various aspects of agriculture in different areas. It consists of five parts and a sixty-six page introductory summary of the whole. Part 1, on climate as a world influence, contains an excellent chapter by Richard J. Russell on climatic change through the ages and two other chapters on the how and why of climatic and weather knowledge. Part 2, consisting of ten chapters on climate and agricultural settlement, deals with climatic influence in the settlement of various regions. Here are included inadequate chapters on comfort and disease in relation to climate and health in tropical climates; these might better have been omitted or their places taken by articles prepared by more competent writers. Part 3, consisting of seventeen chapters on climate and the farmer, covers the detailed relationships of climate to individual crops and agricultural activities; it contains an excellent chapter on climate and livestock production by A. O. Rhoad. Part 4, consisting of four chapters on the scientific approach to weather and climate, has a readable chapter on modern meteorology by C. G. Rossly and another on amateur forecasting from cloud formation, which may be useful in these war times when weather bureau forecasts are published for only a few hours in advance. Part 5 covers the last half of this large volume and contains climatic data, with special reference to agriculture in the United States. Although the volume is intended for readers primarily interested in agriculture, its broad scope and careful handling of subject matter make it useful also for others interested in climatic and weather effects acting more directly on man. For the increasing number of physicians who look on these environmental influences as important factors in human existence the volume is easily worth its small cost price. It is unfortunate that this otherwise fine work should have been so poorly handled in the parts dealing with climatic effects on human health and disease. In this respect its broad title is misleading. It is an exceedingly valuable reference work for physicians or others interested in agriculture. The book is well made, with clear readable type, and is free of the small errors so often overlooked.

American Newspaper Reporting of Science News. By Hillier Krieghbaum, Associate Professor of Industrial Journalism, Kansas State College of Agriculture and Applied Science, Manhattan. Kansas State College Bulletin Volume XXV, Number 5. Industrial Journalism Series 16. Paper. Pp. 73. Manhattan, 1941.

This is the first complete history ever compiled of the reporting of science news in American newspapers. It covers the period starting with the issuance of *Publick Occurrences*, the first American newspaper, dated Sept. 25, 1690, through 1937. This first American newspaper, which died after a single issue, carried a story about the then prevailing "fevers" and a smallpox epidemic. As Krieghbaum points out, "These two stories might be cited as the first American newspaper reporting of science news. The paragraph simply stated the facts and made no effort to support any control measures." Another interesting fact about the scientific aspect of early American journalism is brought to light by Krieghbaum in his description of one of the first newspaper controversies in America. This concerned smallpox inoculation and took place between the *New England Courant* and the Boston *News-Letter* and the Boston *Gazette*. The *Courant* was printed by James Franklin, older brother of the more famous Benjamin.

From the prerevolutionary war developments in science writing in newspapers, Krieghbaum develops the history of science writing through the postrevolutionary period in American history, agricultural and medical coverage and early nineteenth century coverage into what he terms the "middle period in science reporting." Among the science stories enumerated by him that occurred in the latter era are those regarding Samuel F. B. Morse's telegraph, the laying of the Atlantic cable, the telephone, Edison's electric light and the Wrights and aviation. In the third section of his paper Krieghbaum describes the developments in science reporting following the last world war. Chapter 4 is devoted to the history of Science Service, the organization founded by the late E. W. Scripps as a non-profit making organization for the dissemination of science news to the press. In his final chapter he describes the movement that led to the organization of the National Association of Science Writers. In his final chapter he tells of the meeting of science writers called by Dr. Morris Fishbein, editor of THE JOURNAL, in the headquarters of the Association in Chicago on Oct. 29, 1937. At this meeting the problems arising from the reporting of the advances in medicine and surgery were discussed by the science writers and others interested in popularizing science.

Although some milestones in the history of science reporting subsequent to that date are enumerated in Krieghbaum's paper, the story of the developments in this field that have occurred since the meeting called by Dr. Fishbein is far from complete. However, Kreighbaum does not claim to have brought the story of science news reporting up to date. So many significant developments in this field have taken place during the past four years that it is hoped that at some future time Krieghbaum will bring the story of science news reporting up to date in a supplementary paper. His present report is one that should be carefully studied by every one interested in health education as well as by those directly concerned with the dissemination of scientific news to the public. It represents a distinct contribution to a better understanding of this most important subject and should be placed in all medical, newspaper and schools of journalism libraries.

Blood Disorders in Children. By I. Newton Kugelmass, M.D., Ph.D., Sc.D.Spéc., Attending Pediatrician, Downtown Hospital and Pan-American Clinics, New York. Cloth. Price, $10. Pp. 897, with illustrations. New York, Toronto & London: Oxford University Press, 1941.

This presentation of the blood and its abnormalities in children is different from any of the recent books on hematology. The material is divided into six sections: the hemopoietic system, diseases of the erythron (anemia, polycythemia), diseases of the leukon (including leukemia), diseases of the thrombon (purpura), diseases of the reticuloendothelium (lipoidoses) and diseases of the organism (systemic infections). The material is presented in a clearcut, dogmatic fashion, with elimination of controversial views and a minimum of bibliography. Each condition is described as it exists in the patient and not as some author's discoveries or views. This is the type of presentation that the medical student likes and the busy practitioner prefers, but it will no doubt irritate professional hematologists. It represents the crystallization of the views of one school of hematology. The author adopts what he considers is the correct view in many matters, such as the origin of the blood cells, although others may consider these points undecided. However, hematology is not yet in the stage where a difference of opinion necessarily means that a point of view is wrong. A useful feature is the presentation of summaries in the form of one hundred and twenty-five tables. As a whole the pictures are well chosen, and those showing technical procedures as applied to infants are excellent. There is a discrepancy in the amount of hemoglobin in infancy in the table on page 77 and the chart on page 83. The table of liver equivalents to parenteral preparations of liver extract may be open to criticism, as it is difficult to compare the potency of the intramuscular extracts with whole liver. Details of technic are given whenever any methods or tests are discussed. Valuable also is the section on blood changes in systemic and infectious diseases. A glossary and a section on symptom diagnosis (tabulated symptoms and diseases in which they occur) are given. Throughout the book appear synopses of the history of the subject. The book is intensely practical, unusual in its completeness, in the tremendous amount of material which it contains and in its clear method of presentation. It will no doubt be the standard work on disorders of the blood in children.

Tratamiento del paludismo. Por Carlos Alberto Alvarado. Tesis de doctorado, Universidad nacional de Buenos Aires, Facultad de ciencias médicas. Paper. Pp. 90, with 2 illustrations. Buenos Aires: Imprenta Mercatali, 1941.

Bronco-espiroquetosis de Castellani: Su desarrollo en la República Argentina. Por Jorge Enrique Machado. Tesis de doctorado, Universidad nacional de Buenos Aires. Facultad de ciencias médicas, Escuela de medicina. Paper. Pp. 52, with 9 illustrations. Buenos Aires: Librería y editorial L. E. Y. C. A., Nocito & Rañó, 1941.

La lucha contra el cancer en la República Argentina. Por el Dr. Victor H. Locatelli. Tesis de doctorado, Universidad nacional de Buenos Aires, Facultad de ciencias médicas. Paper. Pp. 61. Buenos Aires: Aniceto López, 1941.

Lesiones traumáticas del astrágalo. Por Jose Manuel del Sel. Tesis de doctorado, Universidad nacional de Buenos Aires, Facultad de ciencias médicas. Paper. Pp. 135, with 33 illustrations. Buenos Aires: Aniceto López, 1941.

La filactotransfusión en pediatría. Por Vicente Jose Anello. Tesis de doctorado, Universidad nacional de Buenos Aires, Facultad de ciencias médicas. Paper. Pp. 55, with 9 illustrations. Buenos Aires: Imprenta de Alfredo Frascoli, 1941.

Neumoconiosis: Estado actual del tema, silicosis pulmonar. Por Santiago Juan Marchese. Tesis de doctorado, Universidad nacional de Buenos Aires, Facultad de ciencias médicas, Escuela de medicina. Paper. Pp. 80, with 4 illustrations. Buenos Aires: A. Guidi Buffarini, 1939.

Anestésia raquídea con percaína en cirugía ginecológica. Por el Doctor Horacio L. Mazza. Tesis de doctorado, Universidad nacional de Buenos Aires, Facultad de ciencias médicas. Paper. Pp. 70, with illustrations. Buenos Aires, 1940.

The seven chapters of the thesis of Carlos Alberto Alvarado cover malaria, industrial prevention of the disease by administration of drugs, control of malaria by supervision of malarial patients and carriers and antimalarial therapy. Jorge Enrique Machado discusses Castellani's bronchospirochetosis in Argentina. Two cases observed by the author in his clientele are reported. Several cases from the Argentine literature are briefly reviewed. Victor H. Locatelli deals with the crusade against cancer as carried on in Argentina. Early diagnosis, biologic reactions and biopsy in diagnosis, precancer and the role of tobacco are discussed in detail. Jose Manuel del Sel discusses traumatic injuries of the astragalus, especially fractures. His book is the result of internist work in orthopedics at the Hospital Italiano, Hospital Durand and Clinica Valls of Buenos Aires. Vicente Jose Anello discusses phylactotransfusion in pediatrics with special reference to indications, selection and preparation of donors, preparation of patients and results. Seven cases of local or acute infection, septicemia from suppuration, pneumococcic meningitis and bronchopneumonia are reported. Horacio L. Mazza discusses spinal anesthesia with nupercaine in gynecologic surgery, with especial reference to physiologic and anesthetic effects, advantages, original and modified technics of Quarella and Iones and Villar's technic. A clinical study with statistics of hospital work on gynecologic surgery, in which the author resorted to nupercaine intraspinal anesthesia, is reported. Santiago Juan Marchese makes a general study of pneumoconiosis and pulmonary silicosis. He reviews the modern conceptions on the pathogenesis and the mechanism of development of the diseases, their relations to pulmonary tuberculosis and cancer, clinical and roentgen aspects, prevention and therapy. A clinical and roentgen study of 4 cases is reported.

The Microscope. By Simon Henry Gage. Seventeenth edition. Cloth. Price, $4. Pp. 617, with 313 illustrations. Ithaca: Comstock Publishing Company, Inc., 1941.

The previous edition of this book was reviewed in THE JOURNAL more than five years ago. The present edition is much the same in general arrangement, although some changes have been made in the text and the illustrations in every chapter in order to make the subject more readily understood. Brief attention is given to the electron microscope, with which it is believed magnifications as high as 100,000 diameters can be attained. This newly invented microscope uses electronic waves which are a hundred thousandth of the wavelength of visible light, and as they are invisible their image must be made visible by means of either a fluorescent screen or a photographic plate. The electron microscope is to be compared with a projection microscope in which the image formed is entirely independent of the eye. It is not like the microscope into which one looks and with which the final image is formed on the retina of the eye. The electron microscope at present is not available for ordinary biologic study, but there are already certain uses for which it is adapted. This edition also calls attention to a substance known as polaroid, which may be used instead of Nicol prisms for the polarizer and is considerably cheaper. Polaroid is composed of a multitude of fine, elongated crystals embedded in a cellulose matrix, which is usually mounted between thin plates of glass or heavy film. Mention is also made of new plastics for mounting specimens in place of Canada balsam. There are chapters on spectroscopy, the polarizing microscope, the dark field microscope and the bright field microscope. The book seems to cover completely the physical side of microscopy. This edition is printed on whiter paper than was its predecessor, and that improves its appearance and readability.

Body Mechanics in Health and Disease. By Joel E. Goldthwait, M.D., F.A.C.S., LL.D., Lloyd T. Brown, M.D., F.A.C.S., Loring T. Swaim, M.D., and John G. Kuhns, M.D., F.A.C.S. With a chapter on the Heart and Circulation as Related to Body Mechanics. By William J. Kerr, M.D., F.A.C.P. Third edition. Cloth. Price, $5. Pp. 316, with 121 illustrations. Philadelphia, Montreal & London: J. B. Lippincott Company, 1941.

This book is the cumulative material from a group of Boston workers who have been recognized throughout the world as the nucleus of the pioneers in this field. The book contains their latest views and should be read by every orthopedic surgeon, physical therapist and pediatrician. There is in addition an instructive chapter on the heart and circulation as related to body mechanics by W. J. Kerr of California. Several interesting features include the schematic representation of the postural syndrome resulting from obesity, the Kerr-Lagen belt and the effect on body mechanics of rigid and soft mattresses. Since the first edition of this book was published the fundamental principles described in the study of patients suffering from chronic diseases have become increasingly important. For this reason the authors have changed the title to Body Mechanics in Health and Disease. In the earlier editions emphasis was placed on chronic diseases associated with the faulty mechanics of the body. As their study has progressed, however, it has become apparent that, while this is essential, the most significant part of the work has to do with prevention. More emphasis has been placed on the maintenance of physical fitness and health. Greater attention should be given to the prevention of many deformities which have had faulty body mechanics as their underlying cause. For this reason a chapter on developmental deformities has been added. A number of the chapters have been wholly rewritten in order to include newer knowledge of the application of these principles to systems of the body or to special diseases.

The Chemistry and Manufacture of Cosmetics. By Maison G. de Navarre, Special Instructor in Cosmetics, College of Pharmacy, Wayne University, Detroit. With a chapter on the Federal Food, Drug and Cosmetic Act of 1938 as it Relates to Cosmetics. By Ralph J. Mill, B.S., LL.B., Member of the Faculty of the College of Pharmacy, Wayne University. With a foreword by Roland T. Lakey, Dean, College of Pharmacy, Wayne University. Cloth. Price, $8. Pp. 745, with 179 illustrations. New York: D. Van Nostrand Company, Inc., 1941.

The title of this book is dealt with so extensively and from so many different angles that the reviewer is tempted simply to reproduce a quotation in the foreword: "'Tis better that a man's own works, than another man's words should praise him." A listing of the chapter headings would serve to indicate the vast number of subjects and the phases of the cosmetic industry which are dealt with. The usual information that one would expect to find, such as the chemical nature of various cosmetics, as well as a practical discussion of the factors that enter into their formulation, is detailed. In addition one finds such material as metrology and alligation, a section dealing with equipment for a small cosmetic manufactory, even including a discussion of fire fighting, summaries of inorganic, organic and colloidal chemistry and a consideration of preservatives, antioxidants, emulsifiers, absorption bases, wetting agents and other classes of preparations used in the industry. A list of incompatibilities of various ingredients is useful. A discussion of colors and their certification, as well as extensive consideration of the provisions of the Federal Food, Drug and Cosmetic Act dealing with cosmetics, is included. There are a chapter dealing with the physiology of the skin, hair and scalp and extensive

discussion of all types of cosmetic preparations, including even dentifrices. The author expresses his indebtedness to the literature of the cosmetic industry, and judging from the text and the bibliography it can only be presumed that he is familiar with much of it. There are many detailed descriptions of the tests used in determining the adequacy and stability of various cosmetics. Packaging and labeling (in accordance with federal legislation) are dealt with in connection with the discussion of the various classes of preparations. Sections dealing with items in a certain class contain abstracts of patents—American, British, German, French and others—issued on products and processes used in their preparation. The author states that the book is not intended as a formulary and yet admits that most of the formulas in it have been successfully manufactured in commercial quantities according to the methods described in this book. While the volume deals primarily with the technic and practices of cosmetic manufacture, the information in it should be familiar to those in all branches of the cosmetic industry.

Pills and Proverbs. By Charles H. McCollum, M.D., F.A.C.S. Cloth. Price, $2. Pp. 225, with 9 illustrations. Boston: Meador Publishing Company, 1941.

Angina pectoris forced the author to take life more slowly, and in the extra time he has written a book which is essentially autobiographic, although woven chiefly about his parents, his birth and early environment. He was born in poverty in Tennessee, where he learned sturdy traits of character. He learned the value of discipline in Texas while working in a drug store. While yet a medical student he volunteered as a soldier in the Spanish-American War and at Chickamauga Park helped care for numerous patients with typhoid. After finishing medical school he practiced in a small Texas town, then moved to a larger city, where, after having failed to make a go of two partnerships, he started over alone. Eventually he built a small hospital. Later his son joined him in practice. Many incidents in a long career are reviewed. Dr. W. B. Russ of San Antonio writes in the foreword that all great men in medicine since the days of Hippocrates have been at heart country doctors, even though they became great scientists and lived in cities, the "graveyards of civilization to which humanity from the countryside and villages comes to die morally and spiritually in an atmosphere that glorifies the flesh." Dr. Russ commends this book to "a confused, morally and spiritually ailing generation facing a crisis made inevitable by the softening and deteriorating influences of communism and socialism, . . . a generation that now is called upon to pay the penalty for our social and biologic sins."

Community Hygiene. By Dean Franklin Smiley, A.B., M.D., Professor of Hygiene and University Health Officer in Cornell University, New York, and Adrian Gordon Gould, Ph.B., M.D., Assistant Professor of Hygiene and Attending Physician in Cornell University. Third edition. Cloth. Price, $2.50. Pp. 448, with 120 illustrations. New York: Macmillan Company, 1941.

This edition of a widely used standard textbook on community hygiene has been extensively revised and rewritten. It opens with an introductory review of how community hygiene has developed from primitive, ancient ideas of sanitation to the modern era. This chapter includes an evaluation of the relative importance of different phases of public health work. Section II is devoted to environmental health hazards and their control, with a chapter on "man the commonest source of infection for man" plus chapters on animals as sources of infection for man, insects, weather and outdoor air, indoor air and ventilation, sanitary significance of soil and the relationship of water to disease. Further chapters in this section deal with the provision of sanitary water supply with housing and health, food and health and occupational health hazards. Section III deals with the community attack on specific diseases and disorders. Significant of the modern trend is the fact that the reading chapter in this section has to do with mental hygiene and is followed by the chapter on sex hygiene. Not until then do we find chapters on tuberculosis, heart disease and cancer. Section IV touches on health problems specific to certain groups, such as maternal and child health problems and those involved in infant health, school health and industrial health. Military health problems and the health of the rural population form the topics for chapters in this section. Section V deals with doctors, nurses and hospitals, the drug industry, voluntary and official public health agencies and the future of our health agencies and activities. The authors manifest again a broad grasp of public health problems and their relationship to private medical practice. Up to date and modern as it is, this edition should enhance the reputation for usefulness achieved by previous editions. Particularly notable is the improvement in illustrations. The excellent bibliography is not the least of the valuable features in the book. There is also an adequate index.

Administrative Medicine. Haven Emerson, A.M., M.D., Editor. Loose-Leaf. Fabrikoid. Price, $7.50. Pp. 839, with illustrations. New York & Edinburgh: Thomas Nelson & Sons, 1941.

This loose leaf volume is similar to the loose leaf systems of medicine and surgery and the loose leaf encyclopedia issued by the same publishers. Edited by Dr. Haven Emerson, it reflects his long experience and broad grasp of public health problems and his appreciation of the importance of individual initiative in the private practice of medicine, dentistry and hospital management. The fifty-six contributors are well qualified to write on the subjects assigned. The authors include some who are well known for writings advocating systems of medical practice which are looked on with disfavor by the medical profession, but their presentations are temperate and represent valuable information as to points of view and movements which every physician engaged in administrative duties should possess.

This is a comprehensive survey of the field drawn from many sources and representing all shades of opinion, including some differences and apparent inconsistencies when several authors approach the same subject. It should be a useful reference book, a necessity for every physician engaged in any phase of administrative medicine and important for the private practitioner whose practice touches on or is touched by one or more of the numerous and growing activities in organized public health and public medical care in the United States.

Weight Reduction: Diet and Dishes. By E. E. Claxton, M.B., B.S., D.T.M. & H. With Tables and Recipes Suitable for Diabetics. Recipes by Lucy Burdekin. Second edition. Cloth. Price, 8s. 6d. Pp. 201, with one illustration. London: William Heinemann, Ltd., 1941.

The second edition of this book within four years has been revised and some newer material added, including a table of alcoholic beverages and a short war appendix. The material is written in an entertaining style and is presented in simple, non-technical language. Some of the foods are limited to the British groups (Allenby's Food, Benger's Food, Bourn-Vita). In part II, 104 pages of detailed recipes are given. The book should be extremely helpful to the intelligent layman seeking to understand his diet, but it is not without interest to the physician. No bibliography is given.

Emergency Medical Services Instructions. Part I: Medical Treatment and Special Centres. Ministry of Health. Paper. Price, 30 cents; 1s. 2d. Pp. 60. New York: British Library of Information; London: His Majesty's Stationery Office, 1941.

This is an official document from the British Ministry of Health, planned to be of aid to physicians charged with emergency medical service in Great Britain. It has been worked out in great detail by a competent group of scientific advisers and provides a great deal of material as to the location of the advisers and the various agencies through which emergency medical service is administered.

Our Sex Life: A Guide & Counsellor for Everyone. By Fritz Kahn, M.D. Translated from the German by George Rosen, M.D. Second edition. Cloth. Price, $5.75. Pp. 459, with 41 illustrations. New York: Alfred A. Knopf, 1942.

This is the second revised edition of a book published in this country in 1939. It is a direct, succinct statement covering the sexual functions, hygiene, fertility, abnormalities, diseases, prostitution, and the sex life of the unmarried.

I'm Gonna Be a Father! By Bob Dunn (with a Little Assistance from His Wife). Boards. Price, $1. No pagination. Philadelphia: David McKay Company, 1941.

This is a book consisting largely of cartoons with captions presumably intended for prospective male parents. Some of it is quite funny; none of it is worth the price charged.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

VITAMINS AND ULTRAVIOLET LAMP AS SUBSTITUTE FOR SUNSHINE

To the Editor:—**The flood of ink used to print data concerning vitamins is becoming a torrent, and the claims made for these chemicals are often fantastic. Will you give me some advice based on scientific facts in answer to the following questions? A young man is working in an industrial establishment seven days a week. There is no sunshine whatever in the building owing to the necessity of war blackout. He takes his meals in an artifically lighted basement and does not leave work until after sundown. The employer advises the regular consumption of a vitamin preparation and the use of a sunlamp at home after work. Is either procedure advisable without competent supervision? If so, what vitamin do you suggest and in what dosage, and what ultraviolet sunlamps are effective in taking the place of sunlight as normally found on the West Coast?** M.D., California.

ANSWER.—Any employer who requires the services of employees on a seven day week basis assumes responsibilities in excess of the mere recommendation of the home use of ultraviolet lamps and shotgun vitamin preparations. The questions raised are far from superficial, and their import is greater than may be covered in the space limitations of this department. While emergency conditions may prompt the operations of machinery twenty-four hours daily and for seven days a week, present exigencies do not demand that the very same personnel perform duties on the same shift for every day in the week and over extended periods of weeks or months. Through the operation of swing and staggered shifts, plants may be operated continuously without the imposition of physical burdens on any group of workers. The lure of pay and a half and double pay for overtime is tempting fairly large numbers of workers to volunteer for prolonged hours of services. Fifteen hours daily, though not regular, are not exceptional. In some instances swing shifts that provide for a five day week but including Saturdays and Sundays have led to some demands for excess pay in the absence of excess work periods. "Hogging the pay roll" is a popular emergency product at the very time when some hundreds of thousands of other workers caught without any employment in the snail pace shift to military production are demanding double benefits from unemployment insurance funds. Granting the laudability of much overtime work within reason and anticipating more to come, insults to work physiology and human limitations may not be met solely by a vitamin pill and a sunlamp of uncertain capacity. Only the disingenuous believe that even in an emergency will a sustained work week of seventy hours lead to an output greater than for forty-eight hours. Given a weekly task within physiologic limits and with assignment to staggered shifts, together with proper diet and personal habits, the need for artificial safeguards may disappear. Excess work hours are especially undesirable in jobs involving health exposures. Owing to augmented lung ventilation resulting from fatigue, in two over-hours the intake of toxic materials may exceed the entire preceding eight. In the instance of exposure to lead dust, one additional work hour may be the determining factor with regard to lead poisoning.

Military needs may lead to excess physiologic taxation of workers in which benefits may be anticipated from such measures as artificial irradiation and supplemental vitamins, but it does not follow that work in a windowless building at once indicates a need for vitamin D, the sunlight vitamin. The need for supplemental B_1 might be greater. For the purposes of this reply, no warrant is accepted for specifying precise types of either vitamins or lamps as short circuits around work physiology. If this attempt is to be made at all, it should be accorded the benefit of medical supervision.

RENAL CONCENTRATION TEST WITH SOLUTION OF POSTERIOR PITUITARY

To the Editor:—**Please furnish me with some details on the new concentration tests using solution of posterior pituitary. Would this be safe for a patient who has hypertension due to some renal pathologic condition?** Benjamin Miller, M.D., Baltimore.

ANSWER.—The renal concentration test using solution of posterior pituitary (Sodeman, W. A., and Engelhardt, H. T.: *Proc. Soc. Exper. Biol & Med.*, **46**:688 [April] 1941) is being developed to obtain a procedure requiring no preparation of the patient. Such a procedure is useful in office practice and when cooperation of the patient is in doubt. As described it consists in the subcutaneous injection into an unprepared patient of 10 units of solution of posterior pituitary (1 cc. obstetric or 0.5 cc. surgical). Specimens are collected at half-hourly intervals for two hours and the specific gravity is determined. Small volumes of urine require a Saxe urinopyknometer or weighing bottle for estimation of the specific gravity. In a technic now being developed by Sodeman and Engelhardt, hourly collections for three specimens appear to be as satisfactory and require only the usual small urinometer. In normal persons the specific gravity reaches 1.024 or more in one specimen, at times exceeding 1.032. Corrections for temperature and albumin should be made when necessary as in other concentration tests. It is to be emphasized that in the same normal subject the different concentration tests will give various values for specific gravity, depending on the degree of inhibition of water diuresis by the varying periods of water restriction. In normal subjects higher values may be obtained at times by prolonged periods of water deprivation than with solution of posterior pituitary. Under similar conditions with periods of water restriction up to sixteen to eighteen hours this has not been the case. No claim is made that the procedure gives a "ceiling" specific gravity but that the standards set up for normal subjects are workable ones with a lower limit of approximately 1.024. Similar results have been obtained in South America (Pasqualini, R. Q., and Etala, E.: *Rev. Soc. argent. de biol.* **16**:161, 1940). With impaired renal function the values closely parallel those obtained by water deprivation.

Contraindications to the test include pregnancy, coronary pain and marked oliguria. Hypertension is not a contraindication. Little or no effect has been noted on the blood pressure with the dosage used, even in the presence of uremia. This is a relatively recently developed test and should probably not be employed without previous consideration of the standard methods.

PARTIAL POSITIVE SEROLOGIC TESTS FOR SYPHILIS

To the Editor:—**An unmarried woman aged 20 had given her blood for transfusion in her mother's case about one year before I saw her. At that time the Kline reaction was negative. On a routine check-up it was found that she had a 2 plus Wassermann reaction. The blood has been checked in three laboratories and they report 2 plus Kahn, 2 plus Rytz, 2 plus Kline and 2 plus Wassermann reactions. Her heterophile antibody determination is negative. She states that she has not had any sexual contact and she has never manifested any of the signs or symptoms of primary or secondary syphilis. I have waited two months and have rechecked her blood but still find a 2 plus Wassermann reaction. I also have rechecked her mother's blood, which is negative. I have hesitated to treat her. What is your advice?** M.D., Wisconsin.

ANSWER.—It is impossible to decide from the description of the case whether or not this young woman has syphilis. The fact that she gives partial positive serologic tests for syphilis and a negative heterophile antibody determination, the former confirmed by three different laboratories, establishes a presumption that the patient has some form of the disease. The significance of the serologic test must be checked against a thoroughgoing physical examination conducted by some one completely familiar with the signs and stigmas of congenital syphilis. It is not sufficient in eliminating such a possibility to obtain a negative blood serologic test on the mother. Inquiry should be made, furthermore, into the physical and serologic status of the father, if living, and of siblings if there are such. Not infrequently it is helpful to correspond or to get in contact with a physician who attended the mother on the occasion of this young woman's birth or who is familiar with the family history.

For the checking of the serologic test as such, the determination of the titer of syphilitic reagin and the performance of a Kahn verification test would be useful. After these tests have been performed it would be permissible to watch the effect of four successive weekly injections of bismuth subsalicylate intramuscularly, serologic tests being performed at the time of each injection and for two or three weeks after the fourth injection. This is a species of provocative test, not too reliable, to be sure, but sometimes helpful in evaluating a doubtful case. An arsenical provocative procedure is not recommended, because of the strong nonspecific element.

It is well to have a competent ophthalmologist examine the periphery of the patient's ocular fundi for signs of old chorioretinitis (chicken track pigmentation), and a slit lamp examination of the cornea may establish remnants of vascularization indicative of a low grade and perhaps even relatively asymptomatic interstitial keratitis. It is to be understood that the examination of the patient will exclude as far as possible any

evidence of other diseases responsible for biologic false positive serologic tests for syphilis such as malaria, lepra or subacute bacterial endocarditis.

A denial of sexual contact has no value in eliminating syphilis from the diagnosis. This is also true of inability to give a history of any lesion of early syphilis, especially in the woman. The range of contacts capable of transmitting the disease is such that sexual intercourse is by no means a necessity.

The question as to whether or not this patient should be treated on the serologic findings as described is a difficult one to answer. This is a young and presumably nubile woman, capable of transmitting the disease to children, and, even though a reasonable presumption of nonspecificity can be established for the serologic test, the physician cannot escape a feeling of anxiety and uncertainty, if this patient should subsequently marry or become pregnant. In the event of a pregnancy, one might well be justified in insisting on at least minimal treatment for the protection of the child. On the other hand, it is bad syphilologic practice to institute treatment for the disease in the absence of a positive diagnosis. Once such treatment is instituted, it should be clearly understood both by physician and by patient that it must be carried through to a minimum reasonable standard for the treatment of an actual syphilitic infection. In other words, the patient must react to the situation as if a syphilitic infection had been definitely established and go through with adequate treatment for it. It is this principle which makes for a very proper hesitation in instituting treatment without confirmed diagnosis.

The examination of the spinal fluid in a case of this sort should be conducted when the serologic tests have been confirmed. A spinal fluid examination would now be in order before treatment is instituted. The probabilities are that the test will be negative, but it should nonetheless be performed and all four conventional tests, namely quantitative complement fixation, cell count, globulin estimation and colloidal test, should be reported by the laboratory examining the fluid.

The discrepancy between the negative Kline, which is a sensitive test, at the time of the blood transfusion and the serologic test at the present time is of course disturbing, but such a discrepancy can occur in congenital infections, and it is of course entirely possible in an acquired infection. One would expect, however, had the infection been acquired in the interval between the first and the second examination that the later serologic tests would be strongly and indubitably, rather than partially, positive.

ARSENICALS FOR CARDIOVASCULAR SYPHILIS

To the Editor:—**A married man aged 36 suddenly died in bed following a "minute of gasping for breath," as described by his wife. He had been under my care for syphilis with cardiac involvement. He had a definite aortic regurgitation, moderate right and left ventricular enlargement, but no visible aneurysmal dilatation of the aorta as determined fluoroscopically. I saw him one year ago when he had cardiac failure, with pretibial and ankle edema, fluid (a moderate amount) in both lungs and three fingers' enlargement of the liver. His blood serologic tests were strongly positive on Wassermann, Kahn, Kline and Kolmer tests. He stated that he had previously received "shots" for syphilis by two different physicians in the preceding three years and was pronounced "cured" after from three to six months of treatment by each physician. He responded satisfactorily to digitalis therapy and bed rest after one month and was then permitted to resume his work as an office manager. I placed him then on six months' therapy with bismuth and mercury intramuscular injections every five days, using only Council accepted preparations. He felt perfectly well and at the end of six months his serologic tests were reported as 2 plus on the Boener-Lukens-Wassermann test. I then gave him cautiously a series of neoarsphenamine intravenous injections every five days, beginning with a dose of 0.1 Gm. for one week and increasing 0.1 Gm. weekly until 0.6 Gm. was reached, as the patient was a robust, powerful ex-football player. No reactions were encountered. He received ten weeks of neoarsphenamine therapy and was changed over to three months of bismuth injections and then given ten weeks again of neoarsphenamine, whereupon he died suddenly. Throughout this time I gave the patient 15 minims (1 cc.) of tincture of potassium iodide thrice daily and 1½ grains (0.1 Gm.) of digitalis leaf daily (1 cat unit). Was neoarsphenamine contraindicated in this case despite the therapeutic precautions observed? What was the cause of death, which occurred suddenly, in "one minute," as the patient's wife stated? Was the therapy in this case incorrect or too vigorous in your opinion?**

M.D., Pennsylvania.

ANSWER.—There are two schools of thought on the advisability of using one of the arsenical preparations in treating a patient with cardiovascular syphilis: (*a*) those who object to them and (*b*) those who advise an arsenical in small doses after adequate preparation with bismuth or mercury compounds. The results of treatment with either method are discouraging. Even though the patient in question was given adequate preparation with a bismuth compound the doses of neoarsphenamine given to him were larger than usually recommended. The maximum dose for such patients should not exceed 0.2 Gm. of neoarsphenamine, and in fact the various arsenical preparations made for intramuscular use are highly recommended in such cases. Either bismarsen or sulfarsphenamine, one-fourth or one-sixth the usual dose, has many advocates.

Those who oppose the use of an arsenical in the treatment of patients with syphilitic aortic regurgitation would cite this case as an example of why an arsphenamine should not be used, as the advocates of this concept believe that the injudicious use of such an arsenical precipitates such accidents. It must be admitted, however, that sudden heart failure likewise occurs in patients with aortic regurgitation who have not had arsenic or heavy metal therapy. In view of the fact that this patient had been under antisyphilitic treatment for almost a year prior to his death, it might be assumed that he died from either coronary insufficiency or a profound disturbance in cardiac rhythm, in view of the absence of evidence of an aneurysm. The amount of neoarsphenamine given was much greater than is recommended in the treatment of cardiovascular syphilis.

PHOTOSENSITIZATION FROM PETROLEUM PRODUCTS

To the Editor:—**A local oil storage plant has a problem in cleaning out the tanks after certain heavy oils have been stored in them. The method used is to heat the oil with steam, after which the oil is flushed out with water hoses; occasionally the worker has to go in to keep the drains clear when they clog. After exposure to the fumes, there are no ill effects until the patient gets into the sunlight—then almost immediately an allergic reaction takes place with swelling, redness and a feeling of heat in the affected part. Only the parts exposed to the sun are affected. After several days the skin peels and there is complete retrogression of the condition. As far as I know, the material is a mixture of creosote, lube oil and fuel oil. A shirt or mask does not protect, as the fumes seep inside. Working at night has been tried, but the reaction still takes place as soon as sunlight is encountered. To what is this condition due? How can effective prophylactic measures be taken? What is the best method of treatment?**

M.D., New Jersey.

ANSWER.—The problem is clearly photosensitization by coal tar and petroleum products.

Photosensitization from coal tar derivatives is well known and has been described by Foerster and Schwartz (Industrial Dermatitis and Melanosis Due to Photosensitization, *Arch. Dermat. & Syph.* **39**:55 [Jan.] 1939) and by Schwartz and Tulipan, (A Text-Book of Occupational Diseases of the Skin, Philadelphia, Lea & Febiger, 1939, pp. 172-180). The creosote in the mixture described is a coal tar derivative and a photosensitizer. Creosote oil is known to cause photosensitization among workers using it for impregnating wood used for sleepers, telegraph poles and piling.

Photosensitization from petroleum oil products is not so well known, but it does occur. Some crude oils, especially those with asphaltic bases, have natural photosensitizing properties, but nearly all "dye oils" (a cracked kerosene extract used for coloring lubricating oils) are photosensitizers. When the high boiling petroleum hydrocarbons are heated in the "cracking process" to form gasoline, many complex cyclic hydrocarbons are formed and these are left in the remaining red dye oil. Some of these cyclic hydrocarbons are similar to the photosensitizers formed when coal is destructively distilled to form coal tar. So the "lube" oil and the fuel oil in the tanks which the patients clean may also contain photosensitizers.

The methods for the prevention of this condition consist in wearing clothing impervious to fumes while cleaning the tanks. They may be of rubber, oiled fabric, or the new synthetic resins pliofilm, vinylite or koroseal, described in an article entitled "Clothing for Protection Against Occupational Skin Irritants," by Louis Schwartz (*Pub. Health Rep.* **55**:1158 [June 28] 1940).

On the face, the place most frequently affected, a protective sun screen ointment can be applied before one enters the tanks. This protective ointment can consist of hydrous wool fat 70 parts, castor oil 28 parts and duponol 2 parts for a base. With this base is mixed 5 per cent of a chemical light screen, such as methyl salicylate, quinine oleate, methyl anthranilate or cycloform, and 5 per cent of a physical light screen, such as zinc oxide or titanium oxide.

The Doak Company of Cleveland sells a protective ointment containing the sun screens quinine oleate and titanium oxide; the West Disinfecting Company of Long Island City, N. Y., sells one containing methyl salicylate and titanium dioxide.

After the workers come out of the tank they should take off their work clothes and underclothes, take a cleansing shower bath and put on fresh underclothes and then regular street clothes. Before going out they can make a thin application of the sun screen ointment to the face.

The treatment consists in the application of sun screen ointments.

HYPERTRICHOSIS IN INFANTS AND CHILDREN

To the Editor:—A girl aged 5 months started having excessive, fairly long black hair grow on her back and arms and scattered on the legs and pubic region. She was taken to a pediatrician when the hair was noticed. Intravenous pyelograms showed that the adrenal glands were normal. Roentgenograms of the pituitary region showed that it was normal. The baby is now a year old and apparently normal in every other way. If this is a glandular disturbance would there not be other symptoms? Could heredity be an influencing factor in one so young, and what can be done to inhibit the growth of hair?

G. C. Bates, M.D., Independence, Kan.

ANSWER.—Hypertrichosis in children has been known to occur before other symptoms of endocrine disturbance. There are no doubt cases such as the one described in which no definite endocrine diagnosis can be made because of paucity of symptoms and therefore the cases have not been recorded in the literature. Heredity is often responsible for hirsuties in babies; but in these there is usually superfluous hair present at birth. It is often associated with spina bifida. Thus the patient of Bronstein and Baratz (Hypothyroidism and Cretinism in Childhood: V. Enlargement of the Heart with Hirsuties [Myxedema Heart], *Am. J. Dis. Child.* **52**:128 [July] 1936) was a cretin with superfluous hair, contrary to the rule that hypothyroidism is accompanied by coarse, dry and sparse hair. In this case the superabundant hair was present at birth, which explains why the condition was not benefited by the treatment with thyroid.

When babies are afflicted with acquired hypertrichosis, the condition is most commonly due to disease or tumor of the adrenal cortex or of the pituitary gland or both. Rare cases of hypertrichosis have been ascribed to disease of the pineal gland or even to status lymphaticus, although the thymus, when persistent, is usually held to be inhibitory to the development of secondary sex characteristics (Cooper, Zola K.: The Relation of the Endocrine Glands to the Growth and Distribution of Hair: A Review of the Literature, *Arch. Dermat. & Syph.* **21**:1007 [June] 1930). Niles has written a good article on the role of the adrenal gland in hypertrichosis (Relation of the Adrenal Gland to Hypertrichosis, *ibid.* **32**:580 [Oct.] 1938).

There is no practical local method of the removal of superfluous hair in babies. The only course is to watch the child closely for the appearance of other symptoms that may settle the diagnosis and suggest a method of treatment of the basic disorder.

PLUS MINUS SEROLOGIC REACTION IN INFANT

HEADACHES AFTER MAPHARSEN

To the Editor:—About five months ago on a routine test a primipara four months pregnant was found to have 4 plus Wassermann and Kahn reactions. There were no physical signs of the disease present nor any history of infection, but the presumption was that it was of over five years' duration. She is 32, has been married five years, and is a nurse. She states that she has not been exposed; her husband is negative to tests and for history. She was immediately started on treatment and prior to delivery in December she had received eighteen injections of bismuth subsalicylate and twenty-seven doses of mapharsen. Her pregnancy and delivery were uneventful and occurred at full term with a normal child; the latter was tested at two months and the reactions were entirely negative except that the cholesterinized antigen was reported as plus minus. The child has progressed well without any signs of syphilis. Is it necessary to recheck the child, and, if so, when would be the optimum time? With the last ten injections of mapharsen she has complained of violent headache occurring immediately after injection and lasting for most of the day. What is the significance of this in the presence of normal spinal fluid tests? Her serologic reaction has been unchanged since the last test taken just prior to delivery. To date she has received forty-seven injections of 0.006 Gm. doses of mapharsen and forty-two of bismuth subsalicylate of 0.5 cc. I am particularly interested in an explanation of the headaches and criticism of the treatment to date and suggestions for any changes. She is now receiving courses of bismuth in twelve to fifteen doses weekly, alternating with courses of marpharsen of eight to ten doses.

M.D., New York.

ANSWER.—The child should have had repeated serologic tests done at weekly intervals when the plus minus reaction was reported when it was 2 months old. It is not advisable under such circumstances to await the developments of clinical signs of the disease before repeating a serologic test. The blood should now be examined immediately and, if the reports are negative, subsequent tests at two month intervals should be made until the child is 2 years old. If the tests are negative further rechecks will probably not be necessary, certainly not more often than once a year. If the reports are positive, treatment should be started at once.

The headaches the mother is having after each mapharsen injection are a definite indication to stop the arsenical therapy. It may be that a mild hemorrhagic encephalitis causes the headache, but in any event further arsenical therapy is not indicated. The mother's treatment may now be limited to bismuth alone, but instead of 0.5 cc. of bismuth subsalicylate weekly it is suggested that she be given 2 cc. every five days for a series of twenty injections twice a year for the coming two years.

EXERCISES FOR ATAXIA—MARRIAGE IN FRIEDREICH'S ATAXIA

To the Editor:—Where can I obtain either a book or literature concerning Frenkel's exercises, to be used in cases of ataxia? Is Friedreich's ataxia hereditary? Would it be safe to tell two young persons, a brother and a sister, both of whom have been diagnosed by various neurologists as having Friedreich's ataxia, that it would be wise for them to marry?

J. P. Cogley, M.D., Council Bluffs, Iowa.

ANSWER.—The book by H. S. Frenkel was first published in Leipzig in 1900. An English translation was issued by Blakiston of Philadelphia in 1902, by Rebman of London and New York in 1905 and by Heinemann, the second English edition, London, in 1917. There was also a French edition in Paris in 1907. Some or all of these editions should be in the larger medical libraries and available for borrowing.

Friedreich's ataxia is one of the most hereditary of all nervous diseases. The chance of transmitting the disease to offspring depends entirely on whether or not the condition is dominant or recessive in the family pedigree or whether the pedigree shows a more complex method of inheritance with sparing of one or more successive generations. In the first instance, in which the disease is dominant or recessive on a simple mendelian basis, it would be transmitted to the next generation in at least a proportion of three to one. If the disease has progressed by more complex dimerous methods of inheritance the prognosis would be more difficult to assess, but at least one out of three of the offspring would probably have the disease, and the others would be capable of transmitting it into the third generation.

The inheritance, therefore, of the disease by the two persons in question should be plotted out in a pedigree form. In 1 case the prognosis would be easily assessed; if the condition is transmitted as a dominant, a large percentage of the offspring would have the disease in clinical form.

USE OF PRESSURE COOKER FOR STERILIZING

To the Editor:—Can a pressure cooker be used for sterilizing and, if so, how?

M.D., Wisconsin.

ANSWER.—A pressure cooker is in fact a small autoclave and will serve exactly the same purposes if used in the same manner and with the same precautions. The usual time and pressure used for sterilization are twenty to thirty minutes at a steam pressure of 15 pounds. It is important that all the air be allowed to escape before the air vent is closed and the steam pressure rises. Most pressure cookers are provided with a graduated pressure gage, but some of the smaller ones have a weighted gage which also serves as a safety valve and is not graduated in pounds. The regular graduated gage is more desirable if the cooker is to be used for sterilizing.

Since pressure cookers are not equipped for drawing a vacuum at the conclusion of sterilization, bandages and wrappings will be slightly moist when the cooker is opened and should be immediately dried by moderate heating in an oven.

VAGINAL TAMPONS

To the Editor:—Is the use of vaginal tampons recommended for women of all ages, particularly girls of high school age?

Arthur E. Wade, M.D., Seattle.

ANSWER.—Some gynecologists believe that such tampons may do harm by damming back the blood and by irritating the vaginal mucosa. An occasional physician, on the other hand, maintains that these tampons are helpful in maintaining normal conditions in the vagina. However, most gynecologists have assumed a neutral attitude because they have seen no harm result from the tampons.

Many young girls use the small tampons without apparent harm. However, girls who have difficulty in inserting the tampons, or who are uncomfortable when the tampons are in place, should not persist in using them.

ANTUITRIN S AND HAY FEVER

To the Editor:—One of my patients has asked me whether or not the administration of antuitrin S increases the symptoms of hay fever. I have never been able to find an answer to this question. Will you kindly advise me?

Edward B. Markey, M.D., Dayton, Ohio.

ANSWER.—Many individuals suffering from hay fever and asthma are of the allergic diathesis. They readily become sensitive to a variety of substances and this may include antuitrin S. This is particularly true if the antuitrin S, which is a derivative of animal tissues, is given by injection. Symptoms of hay fever are known to have been accentuated and continued by the superimposition of several allergens.

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BRONCHIECTASIS IN CHILDHOOD

SIDNEY DIAMOND, M.D.

AND

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PHILADELPHIA

Bronchiectasis was first described as a disease entity by Laënnec in 1819. For nearly a century, however, positive recognition of the condition was possible only at the autopsy table; its antemortem diagnosis was purely an inferential one. When Chevalier Jackson,[1] in 1918, demonstrated that the bronchial caliber in the living patient could be determined roentgenographically by the use of insufflated bismuth powder as a contrast medium, a new era in diagnosis was ushered in. In 1922 another radiopaque substance became available for bronchography with the introduction of iodized oil by Sicard and Forestier.[2] Widespread application of contrast roentgenography during the years that followed resulted in a considerable advance in the understanding of the salient points of bronchiectasis. While several features of the lesion continue to form the basis for controversial opinions among clinicians and pathologists, the progressive increase in knowledge has made two facts clearly evident. One is that in a large number of patients whose history and physical status formerly would have led to the presumptive clinical diagnosis of bronchiectasis actual dilatation of the bronchi cannot be demonstrated. The other is that in a great many patients with chronic bronchopulmonary disease, either bronchiectatic or nonbronchiectatic, the process has its inception in childhood.

Desirous of studying in detail the various clinical aspects of bronchiectatic disease in children, we selected from among the many hundreds of children examined and treated since 1930 in the bronchoscopic clinic at Temple University Hospital 75 with bronchiectasis and, for contrast, an equal number with similar symptoms but a normal bronchographic appearance. For the sake of convenience and for want of a better term, we designated the condition of the latter group chronic tracheobronchitis. The patients chosen in the two groups were those on whom the data were the most complete. The diagnosis in each instance was based solely on the presence or absence of bronchial dilatations as revealed by contrast roentgenography. Iodized oil was employed as the contrast medium and was instilled either bronchoscopically or by means of a soft rubber endotracheal or endobronchial catheter placed in the proper position with fluoroscopic aid. In virtually all the children the bronchographic pictures embraced every part of the bronchial tree, so that the distribution and the degree of gross anatomic changes were readily apparent. The patients were followed clinically, bronchoscopically and bronchographically for varying lengths of time, some as long as eight years. No children with a history of a foreign body were included, for we feared that because of the disproportionately large number of such children seen in our clinic their inclusion might render accurate comparison of our data with those of other investigators impossible.

CLINICAL FEATURES

The ages of the patients studied are shown in table 1. There were 33 boys and 42 girls in the bronchiectatic group and 43 boys and 32 girls in the tracheobronchitic group. The earliest age at which bronchiectasis was diagnosed was 13 months, and that at which tracheobronchitis was diagnosed, 14 months. For a number of children whose age at onset was listed as less than 2 years the history of a productive cough since birth was obtained. The duration of symptoms at the time the patient was first seen in our clinic ranged from four weeks in 1 case of bronchiectasis to twelve years in 1 case of tracheobronchitis.

The symptoms dated back to a specific illness in 47 (63 per cent) of the children with bronchiectasis and in 21 (28 per cent) of the others. As illustrated by the figures in table 2, pneumonia was the most common precipitating disease in both groups. The frequent occurrence of a definite disease of the respiratory tract immediately prior to the onset of the symptoms in bronchiectatic children has been noted by Boyd,[3] Marcy,[4] Warner[5] and Raia.[6] Pneumonia, pertussis and measles, separately or in combination, have been the diseases present in most of the cases. In Raia's[6] series, bronchiectasis originated with an attack of pneumonia in 67 per cent of the cases.

The bronchial dilatations were confined to one lung in 44 (59 per cent) of our 75 patients (table 3). Saccular ectasia was present in 9 children, cylindric ectasia in 46 and a combination of the two in 20. The lower lobe of each lung was involved in 51 patients, the middle lobe of the right in 18, the upper lobe of the left in 7 and the upper lobe of the right in 4. In regard to segmental distribution, in 4 of the 7 cases of bronchiectasis of the upper lobe of the left lung the branches of the

From the Chevalier Jackson Bronchoscopic Clinic, Temple University Hospital.

1. Jackson, Chevalier: The Bronchial Tree; Its Study by the Insufflation of Opaque Substance in the Living, Am. J. Roentgenol. **5**: 454 (Oct.) 1918.

2. Sicard, J. A., and Forestier, J.: Iodized Oil as Contrast Medium in Radioscopy, Bull. et mém. Soc. méd. d. hôp. de Paris **46**: 463 (March 17) 1922.

3. Boyd, G. L.: Bronchiectasis in Children, Canad. M. A. J. **25**: 174 (Aug.) 1931.

4. Marcy, C. H.: Bronchiectasis, Internat. Clin. **1**: 144 (March) 1937.

5. Warner, W. P.: Factors Causing Bronchiectasis; Clinical Application to Diagnosis and Treatment, J. A. M. A. **105**: 1666 (Nov. 23) 1935.

6. Raia, Antoinette: Bronchiectasis in Children, with Special Reference to Prevention and Early Diagnosis, Am. J. Dis. Child. **56**: 852 (Oct.) 1938.

lingula were the only ones affected. Otherwise no predilection for any particular bronchopulmonary segment was evident. Limitation of bronchiectatic changes to the lingula, in association with similar changes in the adjacent lower lobe, has been frequently observed by Perry and King [7] and others. The degree of bronchial enlargement was pronounced in 15 of our patients. In all but 1 of these the bronchiectasis was unilateral, and in 7 it involved but one lobe.

TABLE 1.—*Age of Patients at Onset of Symptoms and at Time of Bronchographic Diagnosis*

	At Onset of Symptoms			At Time of Diagnosis		
Age, Yr.	Number of Children with Bronchiectasis	Number of Children with Tracheobronchitis	Totals	Number of Children with Bronchiectasis	Number of Children with Tracheobronchitis	Totals
Less than 2	16	18	34	3	3	6
2 to 4	20	24	44	8	13	21
5 to 9	29	26	55	32	44	76
10 to 14	10	7	17	32	15	47
Totals	75	75	150	75	75	150

That the bronchiectatic and the tracheobronchitic children were comparable as to the nature and intensity of their symptoms is demonstrated by the figures in table 4. The only significant difference was the presence of fetid sputum in 23 per cent of the patients in group 1, in striking contrast to its complete absence in those in group 2. At that, the number of patients with foul smelling sputum was relatively small, a fact which lends support, in regard to children at least, to the observations of Marcy,[4] Warner [5] and Hedblom [8] that the classic picture of noisome expectoration in bronchiectasis actually is far less common than is generally supposed. In Warner's [5] series the sputum was malodorous in 20 per cent of the patients. Jackson and Jackson,[9] in describing the putrefaction which gives rise to the unpleasant odor in patients with bronchiectasis, likened the affected bronchi to septic tanks. They pointed out that when the purulent exudate is first produced it is so thick and of such high viscosity that it cannot be expelled into the larger bronchi. With stagnation the degree of viscosity is reduced by bacterial activities until it ultimately reaches a state that will permit bechic expulsion.[10]

It will be noted that of the 22 children who had hemoptysis on one or more occasions more than two thirds were in the bronchiectatic group and that of 7 whose hemoptysis was massive 6 were in the bronchiectatic group. Boyd [3] has pointed out that expectoration of blood is more common in bronchiectasis than in any other pulmonary disease of childhood. Apparently it is not as frequent in children as it is in older persons, however. According to Hedblom [8] hemoptysis of some grade occurs in more than half of the adults with bronchiectasis. Not a single instance of the dry bronchiectasis described by Bezançon [11] and his associates was observed in our series. All the patients in the two groups had a chronic cough productive of purulent sputum. In most of them the severity of the cough and of the expectoration varied considerably from time to time, usually being aggravated by the supervention of an acute infection of the respiratory tract. In 28 (19 per cent) the cough was continuously distressing. The general health was not seriously impaired in the great majority of the patients. With the exception of 2 children who required transfusions to replace blood lost in profuse hemoptysis none of the patients had severe secondary anemia.

There was no relation between the severity of the symptoms and the number of lobes or lungs involved in the bronchiectatic process. A persistently severe cough and expectoration of fetid sputum were present in a slightly greater proportion of the patients with large dilatations, however, than of the group as a whole. Of the 15 children with pronounced ectasia, 5 had an incessant cough and malodorous sputum, 2 had a continuously distressing cough with odorless sputum and 2 others had noisome sputum with a comparatively mild cough. These data suggest that a large bronchial cavity is somewhat more likely to provide a nidus for the development of "septic tank" phenomena than is a small one. Nevertheless, an evaluation of the symptoms in our series as a whole cannot but lead to the view, shared by Head [12] and by Ballon, Singer and Graham,[13] that the clinical picture is not a reliable index of the degree of anatomic damage.

The results of physical examination of the chest were not uniform in our patients. The signs elicited were not constant in individual patients, and they did not correspond to the extent or the severity of the bronchiectasis. They varied with the quantity of exudate in the tracheobronchial tree and with the site and degree of alveolar consolidation. Clubbing of the fingers was present in 8 of the bronchiectatic children, 2 of whom had large dilatations. It did not occur in any of the others.

TABLE 2.—*Age of Sixty-Eight Children at Time of Specific Antecedent Factor*

	Number of Children in Various Age Groups at Time of Original Factor									
	Age of Children with Bronchiectasis, Yr.					Age of Children with Tracheobronchitis, Yr.				
Nature of Original Factor	Less Than 2	2 to 4	5 to 9	10 to 14	Totals	Less Than 2	2 to 4	5 to 9	10 to 14	Totals
Pneumonia	6	6	12	1	25	2	3	4	..	9
Abscess of lung	..	..	1	..	1	..	..	..	..	0
Pertussis	.	5	1	..	6	..	2	4	..	6
Measles	..	..	..	..	0	..	..	..	..	0
Tonsillectomy	..	1	7	1	9	..	1	2	..	3
Influenza	1	..	..	1	2	1	..	..	..	1
Pertussis and pneumonia	..	1	1	..	2	..	1	1	..	2
Measles and pneumonia	..	1	..	..	1	..	..	..	..	0
Cyanosis at birth	1	..	..	..	1	..	..	..	..	0
Totals	8	14	22	3	47	3	7	11	0	21

Chronic inflammatory disease of the nasal accessory sinuses was evident clinically and demonstrable roentgenographically in 48 (64 per cent) of the children in the bronchiectatic group and in 46 (61 per cent) of

7. Perry, K. A., and King, D. S.: Bronchiectasis: A Study of Prognosis Based on Follow-Up of Four Hundred Patients, Am. Rev. Tuberc. **41:** 531 (May) 1940.

8. Hedblom, C. A.: Pathogenesis, Diagnosis and Treatment of Bronchiectasis, Surg., Gynec. & Obst. **52:** 406 (Feb.) 1931.

9. Jackson, Chevalier, and Jackson, C. L.: The Bronchiectatic Septic Tank, Its Prophylaxis and Treatment, Am. Rev. Tuberc. **30:** 599 (Dec.) 1934.

10. Jackson, Chevalier, and Jackson, C. L.: Bronchoscopy, Esophagoscopy and Gastroscopy, Philadelphia, W. B. Saunders Company, 1934, p. 325.

11. Bezançon, F.; Weil, M. P.; Azoulay, R., and Bernard, E.: Dry Hemoptysic Type of Bronchiectasis, Bull. Acad. de méd., Paris **91:** 100 (Jan. 22) 1924.

12. Head, J. R.: The Treatment of Bronchiectasis, M. Clin. North America **19:** 1777 (Jan.) 1936.

13. Ballon, Harry; Singer, J. J., and Graham, E. A.: Bronchiectasis; Etiology and Pathology, J. Thoracic Surg. **1:** 154 (Dec.) 1931.

those in the tracheobronchitic group. In 1 patient, a girl with unilateral bronchiectasis, the sinus disease did not make its appearance until she had been under our observation for four years. In all the others the sinusitis was present at the time of the bronchographic diagnosis. The incidence of sinus disease varied according to the age of the patient, being decidedly lower in infants than

TABLE 3.—*Extent and Distribution of Bronchiectasis in Seventy-Five Cases*

Location of Bronchial Dilatations	No. of Cases
Right lung	24
Upper lobe	1
Middle lobe	2
Lower lobe	12
Middle and lower lobes	8
Upper, middle and lower lobes	1
Left lung	20
Lower lobe	15
Upper and lower lobes	5
Both lungs	31
Lower lobe of both	23
Lower lobe of both and middle lobe of right	4
Lower lobe of both and upper lobe of left	1
Middle lobe of right and lower lobe of left	1
Upper, middle and lower lobes of right and lower lobe of left	1
All 5 lobes	1

in older children. Coexisting sinusitis was noted in only 44 per cent of the children seen before the age of 5 years, whereas it was found in 66 per cent of those whose condition was diagnosed at a more advanced age. Raia [6] observed sinus disease in 82 per cent of her bronchiectatic children. With regard to the incidence in adults with bronchiectasis, Perry and King [7] reported 66 per cent, Walsh and Meyer [14] 67 per cent, Hodge [15] 75 per cent, Farrell [16] 79 per cent and Clerf [17] 82 per cent. Moersch,[18] on the other hand, has been able to find sinusitis in only 33 per cent of his patients with bronchial dilatations. Clerf [19] and Goodale [20] called attention to the frequent presence of sinus infection in association with bilateral bronchiectasis, in contradistinction to its infrequent occurrence with unilateral dilatation, apparently suggesting an etiologic relationship between the paranasal infection and the bronchial lesion. This correlation did not obtain among our patients. Sinusitis was present in 20 (64.2 per cent) of the children with bilateral ectasia and in 28 (63.6 per cent) of those with unilateral dilatation. Moreover, it was present in 60 per cent of the patients whose bronchiectasis was limited to one lobe.

On the whole the bronchopulmonary symptoms were somewhat more severe in the children with sinusitis than they were in the others. That a considerable part of the symptom complex was due to the accompanying sinus disease was indicated by the decided accentuation which occurred during flare-ups of paranasal sinusitis and by the dramatic alleviation which often followed the establishment of free drainage in the cases in which sinus obstruction existed. Graham [21] had occasion to observe directly the effects of acute sinus disease on the mucous membrane of bronchial fistulas. He noted that approximately twenty-four hours after the onset of the sinus infection the bronchial mucosa became acutely inflamed; with the subsidence of the sinusitis the inflammatory bronchial reaction promptly cleared up. The sinus infections in our children all responded satisfactorily to therapy. Radical operations were performed on 3 patients, conservative measures sufficing for the remainder. Adequate treatment of the sinus disease resulted in definite improvement in the extranasal symptoms in most cases, but in no instance did it lead to their permanent abolition.

Acute empyema thoracis, independent of lobectomy, developed in 7 children with bronchiectasis. In each the lesion was effectively controlled by thoracostomic drainage. Another patient at the time she was first seen had a nonbronchiectatic abscess in the upper lobe and mild cylindric bronchiectasis in the lower lobe of the left lung. Hers was the only case of pulmonary abscess in the entire series. None of the other diseases, such as amyloidosis and brain abscess, which have so often been observed to constitute a part of the bronchiectatic picture in adults with long-standing bronchiectasis, were evident in any of the children.

Allergic manifestations were comparatively uncommon among our children with bronchiectasis. Only 3 had asthma and recurrent urticaria. In the tracheobronchitic group, on the other hand, 13 were asthmatic, 3 had chronic eczema, 1 had hay fever and 1 had rose fever. In every case the allergic disease was already established at the time of the bronchographic diagnosis. The low incidence of asthma in our bronchiectatic patients is at considerable variance with the 32 per cent reported by Watson and Kibler,[22] who voiced the belief that allergic bronchitis is often a precursor of bronchiectasis. Likewise, the bronchoscopically aspirated

TABLE 4.—*Relation of Symptoms to Presence and Extent of Bronchiectasis*

	Number of Patients				
	Unilateral Bronchiectasis			Bilateral Bronchiectasis	Tracheobronchitis
	Limited to 1 Lobe	More Than 1 Lobe	Totals		
Continuously severe cough	6	6	12	6	10
Frequent febrile episodes	4	2	6	3	8
Pain in chest	2	3	5	1	3
Dyspnea	3	1	4	5	9
Pronounced malnutrition	3	1	4	1	6
Massive hemoptysis	4	2	6	0	1
Mild hemoptysis	2	5	7	2	6
Fetid sputum	3	8	11	6	0
Totals	30	14	44	31	75

secretions in our patients did not contain the large proportions of eosinophilic leukocytes observed by these authors.

Except for 2 children with bronchiectasis who had rheumatic heart disease characterized by an advanced degree of myocardial and valvular damage, none of our patients had any chronic disease other than those already noted. Sippe [23] mentioned hypoglycemia as common in

14. Walsh, T. W., and Meyer, O. O.: Coexistence of Bronchiectasis and Sinusitis, Arch. Int. Med. **61**: 890 (June) 1938.
15. Hodge, G. E.: Relation of Bronchiectasis to Infection of the Paranasal Sinuses, Arch. Otolaryng. **22**: 537 (Nov.) 1935.
16. Farrell, J. T., Jr.: The Importance of Early Diagnosis in Bronchiectasis: A Clinical and Roentgenologic Study of One Hundred Cases, J. A. M. A. **106**: 92 (Jan. 11) 1936.
17. Clerf, L. H.: The Interrelationship of Sinus Disease and Bronchiectasis with Special Reference to Prognosis, Laryngoscope **44**: 568 (July) 1934.
18. Moersch, H. J., in discussion on Hodge, G. E.: Relation of Bronchiestasis to Infection of the Paranasal Sinuses, Arch. Otolaryng. **22**: 537 (Nov.) 1935.
19. Clerf, L. H.: The Bronchoscopic Treatment of Bronchiectasis and Lung Abscess, Am. Rev. Tuberc. **24**: 605 (Dec.) 1931.
20. Goodale, R. L.: An Analysis of Seventy-Five Cases of Bronchiectasis from the Viewpoint of Sinus Infection, Ann. Otol., Rhin. & Laryng. **47**: 347 (June) 1938.
21. Graham, E. A.: Observations on Reaction of Bronchial Fistulae to Acute Infections of Upper Respiratory Tract, Am. J. Surg. **14**: 382 (Oct.) 1931.
22. Watson, S. H., and Kibler, C. S.: The Role of Allergy in Bronchiectasis, J. Allergy **10**: 364 (May) 1939.
23. Sippe, Clive: Hypoglycemia and Ketosis: Relationship to Chronic Antral Disease and Bronchiectasis, M. J. Australia **1**: 675 (May 26) 1934.

bronchiectasis, but in the few children in our series for whom clinical analysis of the blood was performed the dextrose level invariably was normal. Several authors have described cases of bronchiectasis associated with situs inversus, Adams and Churchill [24] observing the combination in 5 cases. Situs inversus was not encountered among our 150 children.

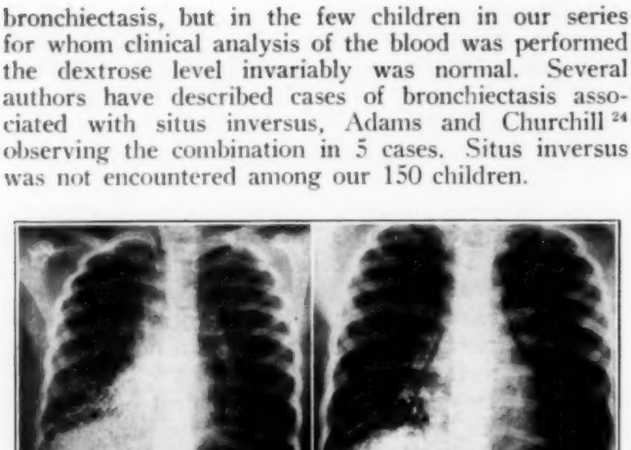

Fig. 1.—Pseudobronchiectasis. *A*, the lower lobe of the right lung is atelectatic; its closely packed, shortened, clublike bronchi appear to be widened. *B*, (two months later), reexpansion of the previously collapsed lower lobe of the right lung has occurred; its bronchi have been restored to their normal length and position, and their caliber is now normal.

The appearance in the roentgenograms of the chest of the individual patients varied from time to time according to the acuteness of the illness. A number of children presented roentgenographic evidence of some degree of involvement of the pulmonary parenchyma during exacerbations of their symptoms. In others the pulmonic fields remained free of abnormal densities throughout observation. Cavities which subsequently were proved bronchiectatic were visible in 3 patients. Irregular, patchy shadows, representing either scattered pneumonic consolidations or small areas of atelectasis, were present at some stage of their disease in 23 patients with bronchiectasis and in 15 with tracheobronchitis. Atelectasis of one or more lobes occurred in 12 children in the bronchiectatic group and in 8 in the other group. Pronounced accentuation of the bronchovascular mark-

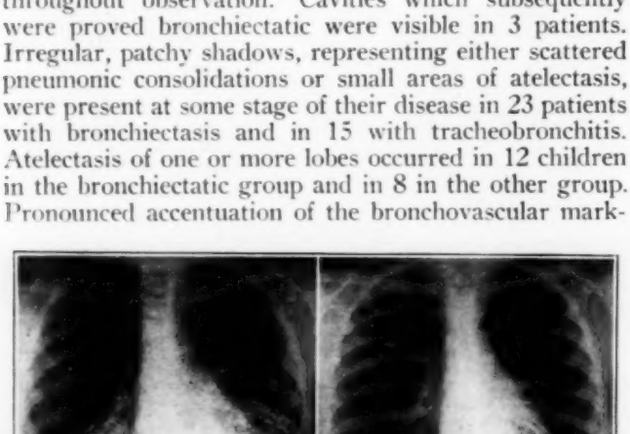

Fig. 2.—Appearance in case in which the bronchial dilatations became smaller. *A*, cylindric and saccular dilatations are present in the bronchi of the lower lobe of the left lung and the adjacent portion of the upper lobe. *B* (two months later), the bronchiectasis is much less noticeable. Further improvement did not occur, however, during the two years the patient was followed.

ings, particularly in the lower lobes, constituted the most severe change in 21 bronchiectatic and 33 tracheobronchitic patients. The roentgenograms of 15 children with bronchial dilatations and of 23 without dilatations were at all times normal or at most showed a questionable increase in the markings. Pleural thickening was present in 22 of the bronchiectatic patients, including the 7 with empyema mentioned previously; it was not evident in any of the tracheobronchitic children. Emphysematous blebs, observed by Andrus [25] to accompany bronchiectasis in many instances, were not apparent in any of our patients.

As can be seen in table 5, roentgenographic changes confined to one pulmonic field were strongly suggestive of unilateral bronchiectasis. Otherwise there was no correlation between the distribution of the roentgenographic changes and that of the dilatations. As a matter of fact, patients with bilateral changes were more likely to have paranasal sinus disease than bronchiectasis. Of 75 patients with roentgenographic changes in both sides of the chest, 55 had chronic sinus disease, whereas only 29 had bronchiectasis. In the 15 children with large bronchial dilatations, prior to the instillation of iodized oil the changes in the areas affected were as follows: irregular, patchy shadows in 6, exaggerated markings in 4, cavities in 3 and lobar atelectasis in 2.

Singer and Graham,[26] Anspach [27] and others have pointed out that the occurrence of lobar atelectasis often antedates the demonstration of bronchial dilatations. The experience of Jackson and Jackson [28] in cases of foreign body has been that bronchiectasis is found more frequently in lobes which have been drowned in their own secretions for a long time than in those in which the duration of the bronchial obstruction has been short. King,[29] Andrus [30] and Holinger [31] have made similar observations in cases of bronchial occlusion originating from causes other than a foreign body. In our series it was difficult to estimate the duration of the collapse, for in all but 3 patients it was present at the time of the initial examination. Of the 3 children in whom lobar atelectasis developed during the period of observation, 1 had recurrent collapse of the lower lobe of the left lung and the other 2 presented the roentgenographic picture of a shrunken, airless lower lobe of the left lung, lower lobe of the right lung or middle lobe of the right lung on different occasions. The interval between the discovery of the collapse and the attainment of

TABLE 5.—*Relation Between Extent of Roentgenographic and Bronchoscopic Changes and Extent of Bronchiectasis*

	Number of Cases		
	Unilateral Bronchiectasis 44	Bilateral Bronchiectasis 31	Tracheobronchitis 75
Roentgenographic changes			
Minimal or none	5	10	23
Unilateral	29	2	8
Bilateral	10	19	44
Abnormal bronchoscopic changes			
None	0	0	1
Unilateral	18	0	4
Bilateral	26	31	70

24. Adams, Ralph, and Churchill, E. D.: Situs Inversus, Sinusitis, Bronchiectasis: A Report of Five Cases, Including Frequency Statistics, J. Thoracic Surg. **7**: 206 (Dec.) 1937.

25. Andrus, P. M.: Chronic Nonspecific Pulmonary Disease, Am. Rev. Tuberc. **41**: 99 (Jan.) 1940.

26. Singer, J. J., and Graham, E. A.: Roentgen Ray Study of Bronchiectasis, Am. J. Roentgenol. **15**: 54 (Jan.) 1926.

27. Anspach, W. E.: Atelectasis and Bronchiectasis in Children: A Study of Fifty Cases Presenting a Triangular Shadow at the Base of the Lung, Am. J. Dis. Child. **47**: 1011 (May) 1934.

28. Jackson, Chevalier, and Jackson, C. L.: Diseases of the Air and Food Passages of Foreign Body Origin, Philadelphia, W. B. Saunders Company, 1936, p. 115.

29. King, D. S.: Hemorrhagic Bronchiectasis and Its Surgical Cure, Internat. Clin. **1**: 130 (March) 1937.

30. Andrus, P. M.: Bronchiectasis: An Analysis of Its Causes, Am. Rev. Tuberc. **34**: 46 (July) 1937.

31. Holinger, P. H.: The Role of Inflammatory Bronchial Stenosis in the Etiology of Bronchiectasis Ann. Otol., Rhin. & Laryng. **47**: 1070 (Dec.) 1938.

reexpansion was only a few weeks in each instance. The bronchi in all 3 children were repeatedly shown to be normal after reaeration of the affected areas. Of the other 17 patients, the length of the history ranged from four weeks to nine years for the bronchiectatic group and from five weeks to one year for the tracheobronchitic group. The onset of symptoms dated from a specific factor in 14: pneumonia in 10, tonsillectomy in 3 and cyanosis at birth in 1. The entire left lung was atelectatic in 1 patient, the lower lobe of the left lung in 6, the lower lobe of the right lung in 3, the middle lobe of the right lung in 6 and the middle and lower lobes of the right lung in 1. In 8 children, all of whom had dilated bronchi in the lobes involved, reexpansion did not occur. Of the other 9, bronchograms made after reaeration disclosed ectasia in 4 and normal-sized bronchi in 5.

Jennings [32] has called attention to the fact that the widening demonstrable through the use of iodized oil in the closely packed bronchi of a collapsed lobe frequently disappears when the lobe reexpands. Lander and Davidson [33] considered this phenomenon to be an indication that bronchiectasis is a reversible process, but in all likelihood it is due to the restoration of the previously crowded, shortened, clublike bronchi to their normal length and position rather than to their recovery from true bronchiectasis. The term pseudobronchiectasis, suggested by Jackson,[34] seems admirably suited to the actual anatomic state. We observed 4 patients with pseudobronchiectasis among our children; we placed all 4 in the tracheobronchitic group.

TABLE 6.—*Bronchoscopic Abnormalities in One Hundred and Fifty Children*

	Number of Cases		
	Unilateral Bronchiectasis	Bilateral Bronchiectasis	Tracheobronchitis
	44	31	75
Very copious or extremely thick pus			
Unilaterally	11	..	4
Bilaterally	12	19	4
Less copious and less viscid pus			
Unilaterally	12	..	2
Bilaterally	9	12	63
No pus present	..	..	2
Persistent congestion of mucosa			
Unilaterally	5	..	1
Bilaterally	13	15	48
Thickening of bronchial spurs			
Unilaterally	4	..	3
Bilaterally	5	3	16
Wide carina	1	2	12
Bilateral thickening of mucosa	2	4	12
Granulations	3	..	..
Stenosis of orifice of middle lobe of right lung	1	..	2
Exaggeration of tussive collapse of trachea and bronchi	1	..	5

A point that has not been given sufficient emphasis in the literature is that actual bronchiectatic dilatation rarely can be seen bronchoscopically. The main stem and the lower lobe bronchi, the only ones usually permitting the passage of an illuminated bronchoscope, are customarily not the seat of permanent ectasia. The segmental bronchi and their branches are the ones involved in virtually all cases, and they for the most part are inaccessible to direct visual exploration, even with the aid of telescopic magnification, a procedure which is impracticable in the case of children. A pronounced outpocketing of one of the larger bronchi may be apparent on endoscopic examination, but the recognition of cylindric dilatation is rendered highly uncertain by the physiologically rhythmic variation in length and width exhibited by the bronchi during the phases of the respiratory cycle. In our series definite ectasia could not be made out on specular examination in any of the patients.

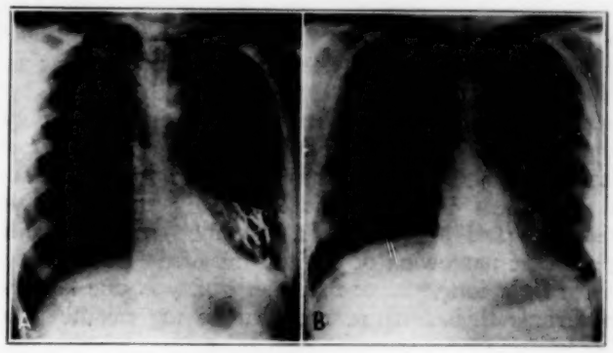

Fig. 3.—Appearance in case in which the bronchial dilatations increased in size. *A*, cylindric dilatations are present in the atelectatic lower lobe of the left lung and the adjacent portion of the upper lobe. *B*, (two years later), the bronchiectasis in the lower lobe of the left lung is much more pronounced.

The bronchoscopic data on our children are recorded in table 6. As to the character of the exudate, the patients were classified according to the most severe form present during their respective periods of observation. In 1 of the 2 children in whom no secretion was found endoscopically at any time, the mucosa was chronically congested and the spurs were thickened; so in reality only 1 patient had an apparently normal tracheobronchial tree at all times. The most striking bronchoscopic difference between the bronchiectatic and the tracheobronchitic children was the presence of copious or extremely thick pus in the smaller bronchi in the majority of the former group and in only a negligible number of the latter group. Not infrequently the secretion in a bronchiectatic child was so abundant that it issued from the proximal end of the bronchoscope as soon as the instrument was inserted into the trachea. In many instances the pus was nearly solid and its removal by suction from the deeper branches was accomplished with considerable difficulty. When the glass

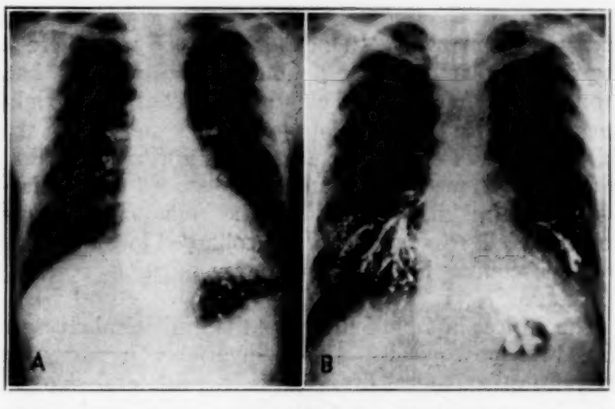

Fig. 4.—Appearance in case in which the bronchial dilatations increased in size. *A*, small saccular dilatations are present in the bronchi of the lower lobe of the left lung. *B* (three and one-half years later), the dilatations have become much larger.

32. Jennings, G. H.: Reexpansion of the Atelectatic Lower Lobe and Disappearance of Bronchiectasis, Brit. M. J. **2**: 963 (Nov. 13) 1937.
33. Lander, F. P. L., and Davidson, Maurice: The Etiology of Bronchiectasis (with Special Reference to Pulmonary Atelectasis), Brit. J. Radiol. **11**: 65 (Feb.) 1938.
34. Jackson, C. L.: Personal communication to the authors.

collecting tube was inverted the semisolid pus often failed to run down its sides. Except for the quantity and viscosity of the exudate the differences in the endoscopic appearance in the two groups were not especially significant. Why widening of the carina, presumably caused by enlargement of the mediastinal lymph glands, should have occurred with greater frequency in the tracheobronchitic patients than in the others is hard to explain. It is noteworthy that only a few of the children with it exhibited positive cutaneous reactions to tuberculin.

The small number of patients in our series with visibly narrowed bronchial orifices fails to support the contention of Holinger [31] that inflammatory bronchial stenosis is a frequent bronchoscopic finding in children with atelectasis and bronchiectasis. Of the 3 patients with perceptible narrowing of the opening of the middle lobe of the right lung, the constriction in 2 was due largely to chronic thickening of the spur of the middle lobe

TABLE 7.—*Bacteria in Bronchoscopically Aspirated Secretions of One Hundred and Forty-Eight Children*

	Number of Children in Whom Micro-Organism Was Found	
Micro-Organism	With Bronchiectasis 75	With Tracheobronchitis 73
Hemolytic streptococcus	47	35
Nonhemolytic streptococcus	49	38
Hemolytic staphylococcus	9	15
Nonhemolytic staphylococcus	15	21
Pneumococcus	27	36
Micrococcus catarrhalis	41	47
Hemophilus influenzae	12	7
Escherichia coli	2	..
Bacillus pyocyaneus	2	..
Gram-negative diplococcus	2	1
Neisseria sicca	4	..
Neisseria flava	1	..
Bacteroides	10	4
Spirochete	2	1
Diphtheroid organism	3	1
Bacillus fusiformis	8	5

and was permanent. In neither instance was there a coexisting lobar collapse. One of the patients had bronchiectasis of the middle and lower lobes of the right lung; the other had no dilatations. The stenosis in the third child was due to an acute inflammatory swelling of the mucous membrane and was associated with atelectasis of the middle lobe. When the inflammatory reaction subsided, reexpansion of the collapsed lobe occurred and subsequent bronchographic examination revealed no ectasia.

The figures in table 6 illustrate that unilateral changes seen bronchoscopically almost invariably indicate the presence of unilateral bronchiectasis. Bilateral changes were less significant, for the inflammatory involvement of the endoscopically accessible parts of the bronchial tree tended to be bilateral, irrespective of the existence of dilatations or their distribution. As in the case of the roentgenograms of the chest, bronchoscopic evidence of disease on both sides was more likely to be accompanied by paranasal sinusitis than by bronchiectasis. Of 127 children with bilateral endoscopic changes, 83 had sinus disease and only 57 had bronchiectasis.

There was nothing distinctive about the bacterial flora in the bronchi of either the bronchiectatic or the tracheobronchitic children. Our observations in this respect correspond to those of Kolmer,[35] Greey [36] and Hamman.[37] The relative frequency with which various organisms were found in smears and cultures of the bronchial exudate in the 148 patients from whom bronchoscopic specimens could be obtained for bacteriologic study is shown in table 7. Aerobic and anaerobic cultures were made each time the pus was examined. From 3 of the patients with bronchiectasis hemolytic streptococci were persistently obtained in pure culture. From the remainder the organisms present were obtained in mixed culture. Specimens of bronchial secretion taken at different times from the same child often contained different organisms. No fungi or tubercle bacilli were recovered from any of the patients.

The incidence of spirochetes and fusiform bacilli in the bronchial exudates of our bronchiectatic children was considerably lower than that generally observed in adults. Smith [38] has been able to demonstrate these organisms in more than 80 per cent of his adult patients with dilatations. Their comparative rarity in children suggests that fusospirochetal bacteria ordinarily are secondary rather than primary invaders in bronchial infections. The much more common occurrence of chronic oral disease in adults affords a reasonable explanation for the greater frequency with which these organisms are found in the vicinity of the bronchial lesions in older persons. The total number of children in our series whose bronchoscopically aspirated secretions contained spirochetes, fusiform bacilli or both was 14. In the 2 bronchiectatic children in whom spirochetes were found they were present in association with fusiform bacilli; in the tracheobronchitic patient they were present independently. There was no relation between the presence of fusospirochetal organisms and the character or odor of the bronchial exudate.

RESULTS OF TREATMENT

General supportive measures, including confinement to bed during exacerbations, formed the basis for the therapeutic program for the patients in the two groups. As most of the children were followed as outpatients, the extent to which these measures could be controlled was limited. Symptomatic treatment for every patient was augmented by efforts to keep the air passages free of accumulated exudate, combat the bronchial infection and eradicate extrathoracic foci of disease. The frequency of bronchoscopic aspiration was determined largely by the character and severity of the symptoms. Occasionally, during bronchoscopy bronchial lavage was performed with physiologic solution of sodium chloride or with an antiseptic solution, such as merthiolate 1:10,000 or mercurophen 1:10,000. In several instances chlorophyll in a 0.2 per cent aqueous solution was instilled. In others, gomenol (a cajuput oil from Melaleuca viridiflora) 20 per cent or monochlorphenol was applied with swabs. The bronchial trees of a number of patients were irrigated with hypertonic saline solution by the Stitt [39] catheter method for short periods. For some of the older children bronchoscopic aspiration was supplemented with the periodic application of pos-

35. Kolmer, J. A.: Bronchial Disinfection and Immunization: The Effects in Rabbits of Intrabronchial Injections of Various Chemical Disinfectants, Arch. Int. Med. **51**: 346 (March) 1933.

36. Greey, P. H.: The Bacteriology of Bronchiectasis: An Analysis Based on Nine Cases in Which Lobectomy Was Done, J. Infec. Dis. **50**: 203 (March) 1932.

37. Hamman, Louis: Chronic Nontuberculous Basal Infections of the Lungs, Am. Rev. Tuberc. **40**: 363 (Oct.) 1939.

38. Smith, D. T.: Etiology of Primary Bronchiectasis, Arch. Surg. **21**: 1173 (Dec.) 1930.

39. Stitt, H. L.: Bronchial Aspiration and Irrigation with a Hypertonic Saline Solution, J. Med. **8**: 112 (May) 1927.

tural drainage when the bronchial secretions were profuse and troublesome; for young children a regimen of this kind was not feasible. To the majority of the patients autogenous vaccines, prepared from organisms recovered from the bronchoscopically obtained secretions, were administered parenterally for varying lengths of time. In addition to all the other measures, careful attention was given to tonsillar and dental infections as well as to paranasal sinus disease, and appropriate therapy was instituted in each instance.

In the absence of an experimental division of our patients into properly controlled groups, each receiving only one form of therapy or no therapy at all, precise evaluation of the relative merits of the various procedures employed is impossible. Certain clinical observations may be worthy of note, however. The bronchoscopic removal of copious or viscid exudate often resulted in a dramatic subsidence of the patient's symptoms similar to that produced by the relief of paranasal sinus obstruction. Bronchial lavage, aside from its action in reducing the viscosity of the exudate, thereby facilitating its removal, appeared to add little if anything to the beneficial effects attending the use of simple bronchoscopic aspiration; none of the antiseptic solutions possessed any advantage over saline solution as a diluting agent. No striking therapeutic results could be directly attributed to the use of autogenous vaccines or to any of the other measures employed.

Surgical removal of the involved lobes in 5 of the bronchiectatic children was performed by Dr. W. Emory Burnett, with an excellent therapeutic result in each instance. The symptoms in many of the other patients were characterized by exacerbations and remissions of varying degree, so that it was extremely difficult to gage the sustained effects of nonsurgical treatment. Most of the children in the two groups were subjectively improved at the termination of the period of observation. In none was the complete and permanent disappearance of symptoms effected, however. Two of the children with bronchiectasis died. One, a girl aged 2½ years, died of generalized bronchopneumonia four months after the diagnosis of ectasia had been made. In the other, a girl of 13, congestive heart failure occasioned by severe myocardial and endocardial damage of rheumatic origin developed two years after the original bronchographic diagnosis. Neither patient had large bronchial dilatations.

Spread of the bronchiectatic process to previously uninvolved bronchi was not noted in any of the patients. The size of the existing dilatations remained unchanged in all but 3. In 1 child bronchographic examination two months after the diagnosis had been made disclosed a moderate reduction in the size of the affected bronchi. A definite dilatation remained, however, and no further change was evident during the two year follow-up study. In the other 2 children the ectasia became somewhat more pronounced over a period of years. In no instance was the alteration of the bronchographic picture accompanied by a corresponding change in the severity of the symptoms. Reference has been made by Anspach [27] and other investigators to the tendency of dilatations, when once formed, to increase in size with the passage of time. Whatever the tendency toward progression may be in adult life, it is clearly evident from the data in our series that such a tendency is not a prominent feature of bronchiectasis during childhood.

COMMENT

Success in the management of a specific disease is in a great measure dependent on the physician's familiarity with the diagnosis, the pathogenesis, the prophylaxis and the treatment of that disease. In regard to bronchiectasis, a positive clinical diagnosis can be made only bronchographically. The symptoms as a rule do not reflect the extent of the anatomic changes in the bronchi. The expectoration of noisome sputum in the absence of a suppurative intrapulmonary focus or empyema with a bronchopleural fistula is strongly suggestive of the existence of bronchial dilatations. The same is true, in a lesser degree, of hemoptysis. These symptoms offer no clue, however, to the site or the severity of the ectasia. There are no physical signs pathognomonic of bronchiectasis. Neither the appearance of the ordinary roentgenogram of the chest nor the bronchoscopic appearance is conclusive, although changes limited to one side usually point to the presence of unilateral dilatations. The bacteriologic picture is altogether nonspecific. If one is to be accurate in the determination of the presence and distribution of bronchiectatic changes, therefore, one must rely solely on contrast roentgenography as the basis for the diagnosis.

Numerous theories have been postulated in recent years to explain the development of bronchiectasis, but in the final analysis the pathogenesis of the disease remains obscure. According to Sauerbruch,[40] Miller [41] and other investigators the ectasia is congenital in most instances. Kline [42] pointed out that regardless of the cause the essential abnormality is a defect in the muscular and elastic tissue of the bronchial wall. Robinson [43] described the defect as being the result of inflammatory destruction, with actual thickening of the wall from replacement fibrosis in many cases, an observation that suggests an acquired cause rather than a congenital one. Many investigators have expressed the belief that the foundation for localized bronchial enlargement is laid in the action of some dilating force on bronchi weakened by chronic infection. The exact nature of this dilating stress is uncertain. Marcy [4] voiced the opinion that increased intrabronchial pressure during cough is the basic factor. Andrus,[30] on the other hand, pointed out that the bronchi in reality are subjected to a compressing force during expiration and cough. In the opinion of Warner,[5] the normal enlargement during inspiration is exaggerated in inflamed bronchi, resulting in permanent dilatation. Other investigators have attributed the ectasia to the pressure exerted by retained secretions. Involvement of damaged bronchi in the contraction of fibrous tissue has long been considered an etiologic factor, particularly in cases in which bronchial dilatations are found in the midst of healed tuberculous lesions. The existence of a possible etiologic relationship between prolonged atelectasis and bronchiectasis is receiving increasingly wide recognition. Andrus,[30] in discussing the abnormal physical stresses which might be conducive to the production of bronchial dilatation, concluded that the only one capable of producing ectasia is the mechanical pull which is exerted on injured bronchi in areas of completely atelectatic pulmonary

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41. Miller, J. A.: The Pathogenesis of Bronchiectasis, J. Thoracic Surg. **3**: 246 (Feb.) 1934.
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43. Robinson, W. L.: Bronchiectasis: A Study of the Pathology of Sixteen Surgical Lobectomies for Bronchiectasis, Brit. J. Surg. **21**: 302 (Oct.) 1933.

tissue. Yet Adams and Escudero,[44] in their experimental work on dogs, have observed bronchiectasis following partial bronchial occlusion but none following total occlusion. The operation of a dilating force was questioned by McNeil, McGregor and Alexander,[45] who maintained that destruction of tissue and not dilatation is the essence of the process. These observers contended that a bronchiectatic cavity is not a dilated bronchus but an excavation in the lung substance that communicates with a bronchus. The wide divergence of opinion as to the presence or absence of dilating stresses is paralleled by a lack of unanimity in regard to the origin of the inflammation in the bronchial wall. Many investigators have expressed the belief that an intraluminal infection is the starting point, but Robinson's [43] demonstration of a wholly intact, normal bronchial mucosa with actively functioning cilia in dilated bronchi removed by lobectomy indicates that infection by a route other than the transmucosal one must occur in a large number of cases.

If bronchiectasis has no congenital basis but is due entirely to injury to the bronchial wall or to coexisting pulmonary disease, it is obvious from the failure of dilatations to develop in any of our 75 tracheobronchitic children that the factors which operate to produce ectasia are not effective in all cases. Also, the absence of spread of the dilative process to uninvolved bronchi in our bronchiectatic children, a finding identical with that of Perry and King [7] in a much larger series, cannot be lightly dismissed. The frequency with which bronchiectasis can be demonstrated in patients who have had a long-standing lobar collapse points to its being an acquired disease, it is true, but definite proof that congenital defects play no part in the production of the lesion must await further study. Up to the present it has not been shown that in patients whose bronchiectasis is associated with atelectasis or some other bronchopulmonary disease the bronchi which are found to be dilated have previously been bronchographically normal.

When the cause and the evolution of bronchiectasis become more fully understood, physicians will perhaps be able to cope with the disease prophylactically on a purely rational basis. Until then, efforts in that direction must of necessity be largely empiric. It is known that bronchial dilatations are often associated with paranasal sinusitis, with chronic bronchial infection, with atelectasis and with parenchymatous pulmonary lesions. If bronchiectasis is a preventable disease, elimination of these disorders may be effective in precluding its development. From the early childhood of the patient, therefore, one should give careful attention to the correction of structural deformities in the nasal chambers which may predispose to the inauguration or to the perpetuation of inflammatory lesions. Therapy administered for an acute infection of the nose, sinuses, tonsils, bronchi or lungs should be adequate to insure the patient's complete recovery. If the infection is chronic when the patient is first encountered, proper measures for bringing it under control should be undertaken. The patency of the air passages should be maintained at all times, with bronchoscopic aid if necessary.

It is evident from the results in our series that symptomatic improvement in children with bronchiectasis can be attained by conservative therapy in most cases. Active progression in the size of the dilatations is not common during childhood. Severe deterioration in health and hemorrhagic episodes are not nearly as frequent as in later years. Amyloidosis and other serious complications are comparatively rare, for they ordinarily develop only after the bronchiectasis has been present for many years. The essential feature of a nonsurgical regimen is the treatment of the infection in the bronchi and in other parts of the respiratory tract. It is the same for children without dilatations as it is for those with ectasia, although the frequency of bronchoscopic aspiration is likely to be greater for the latter. Rist [46] has reported excellent results from the use of artificial pneumothorax, and Berck and Harris [47] have advocated the application of high voltage roentgen irradiation, but neither of these procedures has met with striking success when used by other investigators.

The symptomatic benefits resulting from conservative therapy in our bronchiectatic children lose much of their significance when we realize that in not a single instance did they represent an anatomic cure. Because of the decided tendency toward subjective exacerbations and remissions, the prognosis in bronchiectatic disease is most uncertain and early improvement is often short lived. Experience has taught us that as patients with bronchial dilatations pass from childhood into adult life the likelihood of unfavorable developments increases. As Head [12] has pointed out, relatively few persons who have ectasia in childhood survive to the age of 40. Of 96 patients studied by Perry and King [7] in whom bronchiectasis developed before the age of 10 years, 65 per cent were dead within twenty years and 90 per cent within thirty years.

The outlook without operative intervention, we must admit, is exceedingly dark. If that outlook is to be brightened, it must be done by surgical means, for actual removal of the affected portions of the lungs is the only method at the disposal of physicians today whereby bronchial dilatations can be eradicated. Hesitation to recommend lobectomy or pneumonectomy for children because of the operative mortality is no longer justified. As a rule children tolerate lobectomy better than adults. Edwards [48] reported a 12 per cent mortality in his entire group of patients but none in the 38 patients under 16. Furthermore, the residual lung tissue compensates for the loss of the excised areas far better in growing children than it does in adults, as Bremer [49] has shown. If the indications for lobectomy exist, therefore, the operation should whenever possible be performed in childhood, before the disease has begun to make serious inroads into the patient's health. In the light of present knowledge one may not be able to prevent the occurrence of bronchial dilatations, but by early, accurate diagnosis and judicious surgical intervention one can save a large number of bronchiectatic children from a life of invalidism and perhaps a premature death.

Broad and Ontario streets.

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CARDIAC INFARCTION

THE INCIDENCE AND CORRELATION OF VARIOUS SIGNS, WITH REMARKS ON PROGNOSIS

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The cardinal diagnostic features of cardiac infarction following occlusion of a coronary artery are now well known. How often each of these signs occurs, when in the course of the illness it appears, and how long it may be expected to persist are matters largely of general impression. This study was designed to furnish factual evidence on these points. In the course of the analysis, certain guides to prognosis became apparent.

MATERIAL AND METHOD

The case records of 50 patients with uncomplicated cardiac infarction following coronary occlusion furnish the basis of this report. All were admitted to the wards and were seen daily by at least one of us. Of the group 44 entered the hospital within four days of the acute attack, and 25 were under observation from the first day. Seventeen patients died in the hospital. Necropsy, performed on 10, confirmed the clinical diagnosis.

The material was selected. For our purpose it was necessary to know with reasonable accuracy the time of coronary closure. If this could not be determined within a twenty-four hour period, the case was discarded. Only those cases were included in which there were no known complications, such as embolization to the lungs or to a peripheral artery, pneumonia or occlusion of another coronary branch with extension of the area of infarction during the period of observation. Because of these limitations, a number of additional cases which were studied were discarded.

PROCEDURE

During the progress of this work every patient admitted to the medical wards with the diagnosis of coronary occlusion was under our observation. Pulse rates and rectal temperatures were recorded in routine fashion. The arterial blood pressure was taken at least once each day. An electrocardiogram was made daily or every second day during the first week of illness, and thereafter once or twice a week. Complete blood counts were done with approximately the same frequency. The sedimentation rate of the erythrocytes was determined daily or biweekly, depending somewhat on the severity of the course. The Westergren technic, slightly modified, was employed.[1] The rate was calculated directly from the number of millimeters of fall at the end of one hour. Since none of the patients were anemic, no correction was made for slight variations in the hematocrit reading. The venous pressure was determined repeatedly by direct puncture, with the needle attached to a water manometer, according to the method of Moritz and von Tabora.[2]

The following criteria were arbitrarily adopted, most of them being accepted standards:

Tachycardia, heart rate over 80.
Fever, temperature above 99.6 F. (rectal).
Elevated venous pressure, above 100 mm. of water.
Fall in systolic blood pressure, a drop of 20 mm. or more during the first week of illness, as compared to the previous known level, or the level after complete recovery.
Leukocytosis, above 10,000 per cubic millimeter.
Increased sedimentation rate, over 20 mm. in one hour.
Electrocardiographic changes—those commonly accepted as evidence of cardiac infarction.[3]

INCIDENCE OF VARIOUS SIGNS

In chart 1 is shown the relative frequency with which nine different signs occurred in 50 cases. A friction rub was heard in only 20 per cent. Since these patients were examined with reasonable frequency by interns,

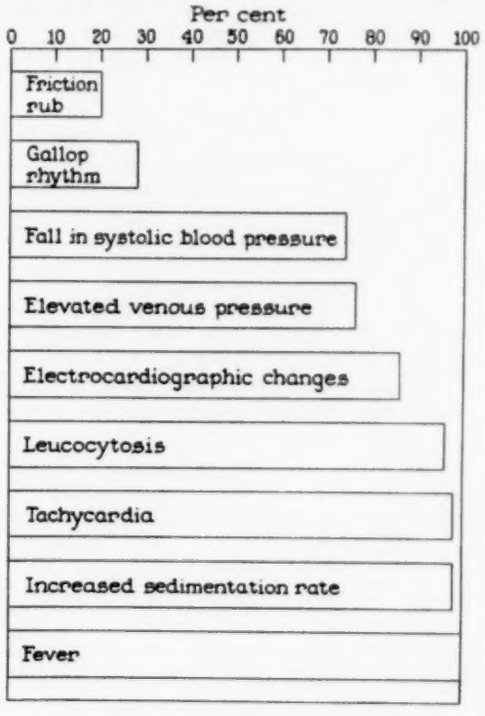

Chart 1.—Average incidence of various signs in 50 cases of cardiac infarction.

residents and members of the visiting staff, it is unlikely that a rub, if present and audible, was overlooked. Gallop rhythm was noted in 28 per cent. These two signs were the least common. A fall in systolic pressure occurred in 74 per cent, elevation of venous pressure in 76 per cent, significant changes in the form of the electrocardiogram in 86 per cent, leukocytosis in 96 per cent, tachycardia in 98 per cent, increase in sedimentation rate in 98 per cent. Fever was recorded in every instance (100 per cent).

TIME OF APPEARANCE AND DURATION OF FOUR SIGNS

In chart 2 are shown the average pulse rates, temperatures, sedimentation rates and leukocyte counts of 20 patients admitted to the hospital on the first day of illness and under observation there for at least a month. The highest heart rates recorded in individual cases ranged from 78 to 132. The average rate was increased at once and reached its maximum of 97 on the third day. From then on it gradually fell and on the eleventh

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day it was normal. There were two subsequent small peaks. The first of these, on the thirteenth day, may have been due to the raising of the patients on several pillows at about this time. The second increase in rate, which occurred on the nineteenth and twentieth days, was very slight and unexplained.

The average temperature was normal on admission and became elevated in the course of the next twenty-four hours, reaching 101.3 F. on the second day. The peak of fever was reached on the third day, when the temperature was 101.7 F. There was gradual defervescence, with return to normal on the eighth day. Thereafter the temperature tended to be subnormal. The range of highest temperatures in the individual cases was from 99.8 to 105 F.

The leukocyte count was elevated on the first day, the average being 12,800. It reached its maximum of 14,600 on the second day. It then fell and on the sixth day was normal and remained so. The highest counts in the individual cases ranged from 8,700 to 27,000 per cubic millimeter.

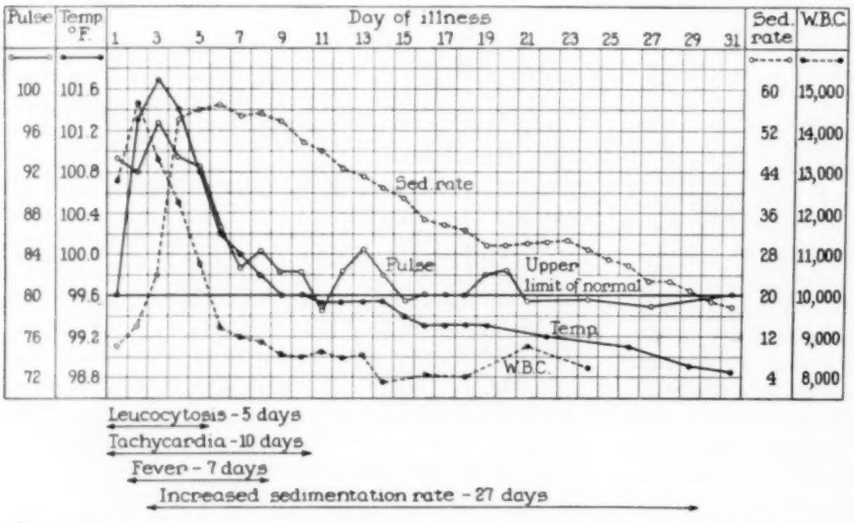

Chart 2.—Correlation of average pulse rates, temperatures, sedimentation rates and leukocyte counts in 20 cases of cardiac infarction in which admission to the hospital occurred on the first day of illness and observation was continued for one month.

The increase in sedimentation rate was the last of the signs to appear and also the one which persisted longest. There was a slight increase on the third day, with the maximum from the fourth to the eighth day. From then on there was a gradual fall, with a return to normal on the twenty-eighth day. The range of highest sedimentation rates in the individual cases was from 21 to 137.

THE RELATION OF CERTAIN SIGNS TO PROGNOSIS

Shortly after an attack of coronary occlusion has occurred, it is difficult to predict the outcome. The patient who appears to be gravely ill may recover; conversely, at any time, and particularly during the first two weeks, in spite of an apparently benign course, death may come suddenly. Three guideposts to prognosis have become apparent in the course of this study. Seven of 8 patients who showed either a rectal temperature above 104 F., a leukocyte count higher than 25,000 or a venous pressure over 200 mm. of water died within sixteen days after onset of the illness. In 5 of these, necropsy was performed. The occurrence of any one of these signs appeared to be of grave prognostic significance, regardless of whether the patient was suffering from a first attack or from one of a series. The eighth patient had a second attack of coronary occlusion four months after leaving the hospital and a third attack five years later, from which he recovered. He subsequently died at home; the final cause of death is not known.

COMMENT

The incidence of pericarditis has varied greatly in different series of cases which have come to necropsy. An average of four such series, compiled by Blumer,[4] gave 21 per cent. Stewart and Turner,[5] on the other hand, in 60 cases examined post mortem, reported evidence of pericardial involvement in 80 per cent. In our group a pericardial friction rub was heard in one fifth of the cases. If audible, it is helpful in diagnosis; failure to hear it does not exclude the diagnosis of cardiac infarction, or indeed, the presence of pericarditis.

Gallop rhythm indicates that the heart muscle has been damaged and is functioning poorly. It was relatively uncommon and of no great diagnostic importance. Its persistence increases the gravity of the prognosis.[6] A gallop was heard in 8 cases, in 1 of which death occurred in three days and in another case in three months.

A fall in systolic pressure usually occurred early, though sometimes delayed for twenty-four hours. It was not invariably observed, being absent occasionally when the infarct was small and the degree of shock slight. The range of fall in individual cases was from zero to 115 mm. of mercury.

The venous pressure of 33 patients was determined. It was elevated in 24. In 14 of these (58 per cent) there was clinical evidence of congestive failure; 4 patients were moribund when the reading was high. In every instance but 1 the elevation was noted during the first week. In 6 the level was 200 or over. The range of elevation was from 103 to 310 mm. of water. Master and his collaborators[7] found evidence of heart failure in 66 per cent of their cases.

Serial electrocardiograms were made in 49 cases. In 40, in addition to the standard limb leads, a precordial lead (4F) was taken. In 1 patient who died soon after admission no record was made, but necropsy confirmed the diagnosis. Of the 86 per cent in which characteristic changes were observed, 43 per cent were of the type indicating anterior infarction, 37 per cent were of the posterior type and 6 per cent were of the mixed type. There was a small group (14 per cent) in which no modifications in form occurred which were diagnostic of infarction. Changes in the electrocardiogram may continue to take place for many months, long after the area of infarction has healed.

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Leukocytosis occurred early and disappeared in the course of the first week. It was a fairly constant sign but was sometimes absent when the infarct was small.

Tachycardia occurred in every case except 1, in which there was complete heart block.

An increase in the sedimentation rate of the red blood corpuscles appears to be a reliable index of infarction and affords a valuable guide with respect to the rate of healing of the lesions in the heart.[8] In 1 case in which the sedimentation rate was not increased, the diagnosis was based largely on characteristic changes in the form of the electrocardiogram. There was no fever, the heart rate never rose above 84, and the highest leukocyte count was 9,900. The blood pressure did not fall. The sedimentation rate on the fifth day reached 20 mm. It seems probable, though it is unproved, that in this case there was occlusion of a small coronary branch without the formation of an infarct. The case is mentioned to illustrate this point. In 1 case in which death occurred twelve hours after the attack, the sedimentation rate on admission to the hospital was 4 and four hours later was 21 mm. Sufficient time did not elapse for it to reach higher levels.

The fact that fever was observed in every case stresses its diagnostic importance. Too often the temperature is taken by mouth or is not recorded at frequent intervals during the first few days. A chart of the rectal temperatures should be kept from the onset in any case in which coronary occlusion is suspected.

There were 16 cases not included in the 50 here reported in which there was a history of pain in the chest and other clinical features suggestive of recent cardiac infarction on admission to the hospital. The most common sign was change in the form of the electrocardiogram. In none of these was an increase in the sedimentation rate found during the first week. Chiefly because of this negative finding, all were treated as though infarction had not occurred. Follow-up showed that 10 patients were "well" after one month or longer. In 3, paroxysmal cardiac pain recurred when they were ambulatory. One proved to have disease of the gallbladder. Two later died and necropsy was performed; in neither case was healed or recent infarction present in the heart; one had hypertensive cardiovascular disease and the other aortic stenosis.

These observations lend support to the view that serial determinations of the sedimentation rate are useful in the differential diagnosis of anginal pain and cardiac infarction.[9] The almost invariable increase in rate caused by infarction, and its persistence for weeks, enhance its value particularly in mild cases which are not seen during the first few days and in which fever and leukocytosis have disappeared. In advanced congestive heart failure the rate of sedimentation may not rise. It should be clearly understood also that, during the period when frequently repeated cardiac pain occurring at rest indicates impending coronary occlusion,[10] no increase in sedimentation rate is to be expected. It is only after closure has occurred and the infarct has formed that the rate rises. In our experience the degree of increase in the sedimentation rate is not an index of the severity of the attack, nor is it helpful as a guide in foretelling the outcome.

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SUMMARY

1. In 50 cases of uncomplicated cardiac infarction an analysis was made of the incidence, time of appearance and duration of certain signs.

2. Increase in the sedimentation rate of the erythrocytes was observed in all but 1 instance. Fever occurred invariably. Other signs were less frequently present.

3. A rectal temperature above 104 F., a leukocyte count higher than 25,000 or a venous pressure over 200 mm. of water indicated a grave prognosis. Seven of 8 patients showing any one of these signs died within sixteen days after the coronary attack.

4. The level of the sedimentation rate is helpful in the differentiation between anginal pain and cardiac infarction. It is of particular value in cases of infarction with mild symptoms which are not seen by the physician during the first few days of illness. The degree of increase is not an index of the severity of the attack nor does it serve as a guide in prognosis.

PULMONARY TULAREMIA

A DISCUSSION OF THE DISEASE AS A CLINICAL ENTITY, WITH REPORT OF THREE CASES

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The earliest papers on pulmonary tularemia as a clinical entity were published in 1931-1932.[1] In 1935 Blackford [2] published one of the first clinical reports on this aspect of the disease. It was followed by a review of the literature up to 1936 of tularemic pneumonia by Sloan, Freedberg and Ehrlich.[3] In 1937 Winter, Farrand and Herman [4] collected all the published cases of pulmonic tularemia and tabulated some of the essential data. Blackford and Casey [5] have recently published a good review of this subject

In reviewing the literature on pulmonic tularemia we have been impressed with the lack of clinical recognition of the pulmonic form of the disease. In a large proportion of the reported cases an incorrect diagnosis or no diagnosis was made, as in our first case. Pessin [6] collected from the literature some thirteen different diagnoses which were wrongly made in proved cases of fatal tularemia. We are able to add several more.

This difficulty in recognition is somewhat surprising in view of the apparent frequency with which pulmonary lesions occur in tularemia. Foshay's collected data [7] show that pulmonary consolidations were found in 107 of 600 cases of tularemia, while pleurisy occurred in 56 and pleural effusions in 18. Blackford [2] found that in 33 of 35 cases of tularemia there were abnormal bronchopulmonary manifestations revealed by roentgen examination and in 7 there was frank pneumonia. Kavanaugh reported that 16 of 123 patients with tularemia

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had pneumonia and 3 had pleural effusions.[8] Blackford and Casey [5] made a clinical diagnosis of tularemic pneumonia in 20 of 95 patients with tularemia and 13 of these had pleural fluid.

The pathologic condition of human tularemia has been adequately described and is well understood. It is essentially a necrotizing process which causes areas of focal necrosis. These may be small, as in the liver or spleen, or large, as in pulmonary abscesses and cavitation. In addition, the disease seems to have a predilection for the lymphoid tissue either locally or generally. Gundry and Warner [9] summarized the autopsies reported in the United States in 1934. Bernstein,[10] Lillie and Francis [11] and Pessin [6] brought this summary up to date in 1935 and 1936. According to Blackford and Casey,[5] there are about 56 necropsy reports in the literature. Foshay [7] gave a general review of tularemia which contains a summary of data from a large number of cases collected by him and an extensive bibliography.

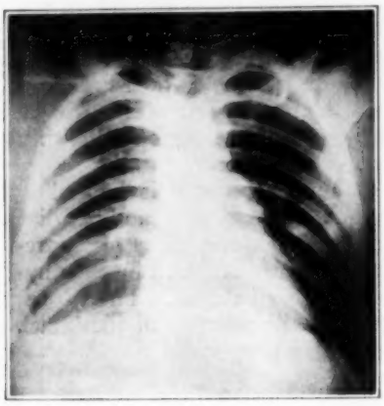


Fig. 1 (case 1).—Appearance on Jan. 24, 1940.

Tularemia may occasionally occur in such obscure form that it is recognized with difficulty. During a period of six months we have had an opportunity to observe and study 3 cases of this kind. In the first case the diagnosis was not made until the time of autopsy, but that experience led us to suspect the correct diagnosis at a relatively early stage in the last 2 cases. These 3 cases are similar in certain respects and represent the pulmonic form of tularemia.

REPORT OF CASES

CASE 1.—*History.*—R. P., a white schoolboy aged 18, admitted to the hospital Jan. 22, 1940, complained of chills and fever and pain in the right side.

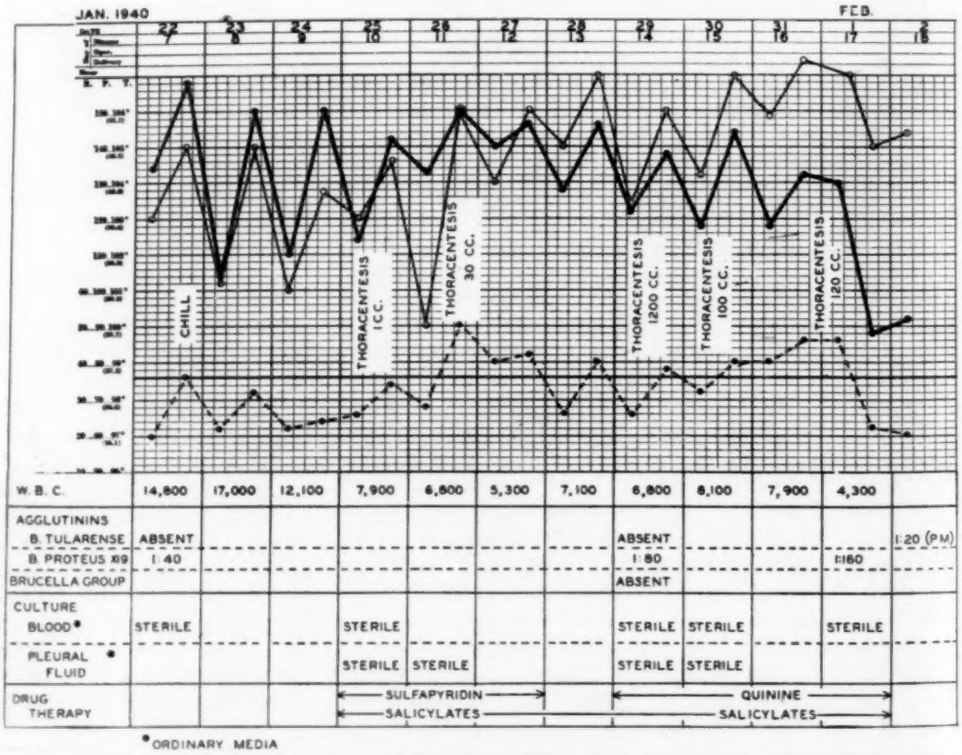
Six days before admission he had experienced a severe frontal headache and a pain in the interscapular region of the back described as severe and aching and lasting for one or two days. He kept on going to school but did not feel well.

January 18 he experienced pain in the right lower portion of the chest which was made more severe on deep inspiration, at which times it would be sharp and knifelike. That day he had a chill and a temperature of 104 F. He felt much worse and was forced to go to bed. The pain in the right side of the chest continued up until admission to the hospital.

During the three days before entry to the hospital he had five chills, and his temperature was as high as 103 to 104 F. It was noticed that he was becoming drowsy and at times delirious. He occasionally became nauseated and vomited. On January 19 he had sudden severe pain in the midepigastrium which radiated straight through to the spine and which gradually diminished and disappeared during the succeeding forty-eight hours. His local physician gave him sulfanilamide for forty-eight hours before admission. January 21 he appeared much worse. It was noticed that he was breathing rapidly, and on this day he had a sudden severe, constant pain in the right flank and in the right upper quadrant of the abdomen. This pain did not radiate and persisted until after admission. His mother stated that for several weeks prior to the onset of this illness he had not seemed to be entirely well but had no specific complaints, except that he seemed drowsy, lethargic and weak and had stopped eating breakfast, which was unusual for him. He had no cough prior to admission to the hospital.

On January 12 (four days before onset of the acute illness) he went rabbit hunting and killed and skinned a rabbit. No ulcer or cutaneous lesion of any kind had been noted following this. There was no history of an insect bite.

Examination.—The patient appeared critically ill, was rational, could answer questions but was not entirely clear mentally. He was slightly cyanotic. (This may have been due in part to the sulfanilamide he had received.) His breathing was slightly rapid. The skin was hot and dry; no cutaneous lesions of any kind were found. There was definite stiffness of the neck, but this was not severe. Several small (1 to 2 mm.) hemorrhagic areas were seen on the soft palate and uvula. Lymph glands of all the superficial groups were palpable except the epitrochlear on one side. They were small, with the exception of one axillary which was moderately enlarged but not tender. There was a slight lag of the right lower portion of the chest on inspiration and slight dulness at


JAN. 1940
FEB.
22 23 24 25 26 27 28 29 30 31 1 2
CHILL
THORACENTESIS 1 C.C.
THORACENTESIS 30 CC.
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THORACENTESIS 120 CC.
W. B. C. 14,800 17,000 12,100 7,900 6,800 5,300 7,100 6,800 8,100 7,900 4,300
AGGLUTININS
B. TULARENSE ABSENT ABSENT 1:20 (P.M.)
B. PROTEUS X19 1:40 1:80 1:160
BRUCELLA GROUP ABSENT
CULTURE BLOOD* STERILE STERILE STERILE STERILE
PLEURAL FLUID* STERILE STERILE STERILE STERILE
DRUG THERAPY SULFAPYRIDIN SALICYLATES QUININE SALICYLATES
*ORDINARY MEDIA

Fig. 2 (case 1).—Curves of maximum and minimum daily values of temperature (heavy line), pulse (light line) and respiration (broken line). The important laboratory data and some of the therapeutic procedures are given.

8. Kavanaugh, C. N.: Tularemia, Arch. Int. Med. **55**: 61 (Jan.) 1935.
9. Gundry, L. P., and Warner, C. G.: Fatal Tularemia: Review of Autopsied Cases with Report of a Case, Ann. Int. Med. **7**: 837 (Jan.) 1934.
10. Bernstein, Alan: Tularemia: Report of Three Fatal Cases with Autopsies, Arch. Int. Med. **56**: 1117 (Dec.) 1935.
11. Lillie, R. D., and Francis, Edward: Pathology of Tularemia, National Institute of Health Bulletin 167, United States Treasury Department, Public Health Service, 1936.

the base of the right lung posteriorly but no rales were present. Both sides of the diaphragm moved well, and this was confirmed by fluoroscopic examination. The heart beat was rapid and regular and there were no murmurs. The blood pressure was 132 systolic and 70 diastolic. There was well defined tenderness all across the upper part of the abdomen, especially beneath each costal margin and in the right flank. Muscle spasm was not present. The liver and spleen were not palpable. The reflexes were normal.

Fig. 3 (case 1).—Appearance on Jan. 27, 1940.

The blood showed 14,800 white cells, of which 84 per cent were granulocytes, 10 per cent lymphocytes and 5 per cent monocytes. There was no anemia. Malaria parasites were not found on repeated smear and thick drop. The urine was normal. The spinal fluid was normal and under a pressure of 210 mm. of water. Roentgen examination of the chest on the day of admission showed a general haziness over the entire right lung, interpreted as slight pleural thickening (fig. 1). Surgical consultants, requested because of the pain in the abdomen and right flank, were of the opinion that surgical disease was not present. The course was stormy; he gradually became very drowsy and at times irrational. During the first few days in the hospital typhus fever, typhoid or paratyphoid fever, localized abscess in the perinephric or hepatic region and virus pneumonia were considered as possible diagnoses. On the tenth day of his illness there were signs suggestive of fluid in the right pleural cavity. Thoracentesis was done, but only about 1 cc. of fluid could be obtained. On smear this fluid contained a few questionable small gram-negative organisms, but their importance was discounted because routine culture of this fluid was sterile. Subsequently every one or two days thoracentesis yielded varying amounts of pale yellow, slightly cloudy fluid from the right pleural cavity (fig. 2). It contained from 1,100 to 2,400 white cells per cubic millimeter, of which about 72 per cent were granulocytes, 10 per cent lymphocytes and 2 per cent monocytes and the remainder was undifferentiated.

Roentgenograms of the lungs at frequent intervals showed a general increasing haziness over the right lung with a small area of pneumonia near the hilus in the left lung which did not increase in size (fig. 3). His spleen became palpable on the twelfth day of his disease and remained so till death. Sulfapyridine was given for forty-eight hours but caused no noticeable change in his course. On the eighth hospital day acute rheumatic fever, chronic malaria and miliary tuberculosis were added to the list of possible diagnoses. Sodium salicylate and quinine were given for four days each without influencing the course of the disease. A mild secondary anemia developed which was treated by repeated small transfusions.

The last few days of his life he became delirious and unresponsive and had to be fed through a stomach tube. His temperature began to drop eighteen hours before death, he became comatose and he died quietly on the eighteenth day of his illness.

Autopsy.—There was fluid in each pleural cavity. The pleural surfaces on the right side were covered by a thin layer of yellow friable exudate. The pleuras on the left were normal. At the base of the right lung posteriorly and over the right diaphragmatic surface the exudate was thicker and was beginning to undergo organization. Most of the right lung was consolidated, with the exception of the lower lobe, which was collapsed. On section this appeared to be a "nodular, fibrinocaseous pneumonia." At the apex there was an area of necrosis 2 by 3 cm. The left lung contained no consolidation but in the lower lobe there was an irregular area of necrosis 3.5 cm. in diameter. The hilar lymph glands were slightly enlarged and several had caseous centers. The liver weighed 2,200 Gm. and on section contained many areas of necrosis. The spleen was enlarged (410 Gm.) and contained many tiny necrotic areas. The other organs, including the brain, were essentially normal. Pasteurella tularensis was isolated and identified from material obtained at autopsy by guinea pig inoculation and agglutination with specific serums by Dr. John Buddingh of the pathology department.

CASE 2.—*History.*—Mrs. A. W., a housewife aged 43, entered the hospital July 20, 1940 with an acute febrile illness of eleven days' duration.

Except for a slight hacking cough of about three months' duration, she had been in good health until one month before admission, at which time she had the onset of malaise, lassitude and occasional shooting pains across the chest anteriorly. About one week later she had symptoms of a respiratory infection beginning with a running nose and a hacking, nonproductive cough which was later productive of small amounts of thick mucoid and pale yellow sputum which had not been blood tinged except once the day before admission. She had a headache which began eighteen days before admission.

On July 9 these symptoms changed abruptly to those of an acute illness. She had a sensation of chilliness followed by high fever, and the next day she had a hard shaking chill. She experienced fever daily until admission, once as high as 105 F., but had experienced no chills for five days prior to admission. On July 17 her husband noticed some difficulty in her breathing, especially during expiration, which he described as a "rattling in her chest." She was disoriented frequently and delirious occasionally.

There was no history since Christmas of contact with a rabbit except a pet wild rabbit which had been caught in a field when a few days old and kept in a nearby barn. It had died about three weeks before her illness began. While the patient was alive her husband maintained that she had experienced no insect bites. However, on the day of her death he did recall having seen a tick on the back of her neck a few days before her illness began and presumably had removed it. He did not recall whether it was feeding.

Examination.—The patient was extremely drowsy but could be aroused and appeared to be critically ill. Breathing was rapid and noisy and expiration suggested a partial obstruction to the outward passage of air. She coughed occasionally and raised a small amount of blood tinged mucoid sputum. There was a distinct cyanotic tint of the nail beds and lips. She was obese. No lesions were found on the skin. General enlargement of the lymph glands was not present. There was exquisite tenderness over the left maxillary sinus. Examination of the fundi showed slight venous congestion; the temporal margins of the optic nerve heads were slightly hazy. There was slight rigidity of the neck and a questionable Kernig's sign was present. Abnormal signs in the lungs were limited to the left lung. There was hyperresonance to percussion anteriorly and in the axilla, but posteriorly the percussion note was dull. Many coarse rhonchi were scattered throughout both lungs and aeration seemed diminished over the entire left lung.

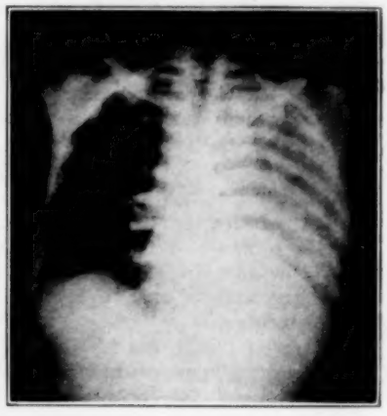

Fig. 4 (case 2).—Appearance on July 20, 1940.

Tactile fremitus was normal. The heart was normal except for the rapid rate. Blood pressure was 130 systolic and 90 diastolic. The abdomen was distended with gas. The liver and spleen were not palpable or enlarged by percussion. Reflexes were hypoactive but equal. The plantar reflex was normal on the left side but a questionable Babinski sign was

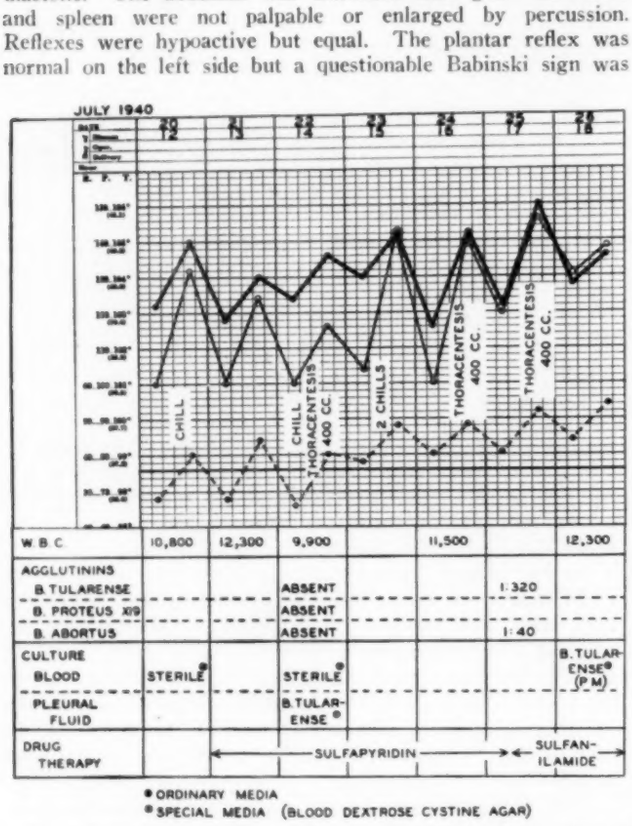

Fig. 5 (case 2).—Curves of maximum and minimum daily values of temperature, pulse and respiration. The important laboratory data and some of the therapeutic procedures are given.

present on the right. Muscle strength was diminished and there was a generalized tremulousness. The motor parts of the cranial nerves were normal.

A blood study showed 10,800 white cells with 80 per cent neutrophils, 2 per cent eosinophils, 14 per cent lymphocytes and 4 per cent monocytes. There was no anemia. She coughed up small amounts of tenacious mucoid sputum which was blood tinged and contained gram-positive diplococci. These appeared to be pneumococci but they would not give the quellung reaction with any type specific serums. Acid fast bacilli were not found. Catheterized urine contained a trace of albumin and a trace of sugar but was otherwise normal. A specimen of the stool was black and watery but contained no hemoglobin and no parasites.

Roentgenograms of the chest with portable apparatus showed a normal right lung. There was general haziness over the left lung which was interpreted as thickened pleura. Underlying this there was a scattered, irregular infiltration suggesting bronchopneumonia. The mediastinal shadow was wide (fig. 4). An interpretation of tumor or mediastinal pleurisy was suggested by the roentgenologist.

In view of this it was felt that she had some kind of tumor of the mediastinum or bronchus which was causing partial obstruction and that pulmonary infection was present distal to the point of obstruction. Sulfapyridine therapy was started the morning of the second day and continued until the day before death (total of four and one half days). Blood levels of effective sulfapyridine were 11 and 16 mg. per hundred cubic centimeters on the third and fourth days of drug therapy. Her course for the first few days was slowly down hill. Stool culture showed no organisms of the typhoid-dysentery group.

Agglutinations with her serum on the fourteenth day of the acute febrile illness against typhoid, paratyphoid A and B, Brucella abortus, Proteus X 19 and tularensis organisms were all negative.

On the third hospital day there were signs of fluid in the left pleural cavity and 425 cc. of slightly cloudy, pale yellow fluid was removed by thoracentesis. This pleural fluid led us to suspect pulmonic tularemia. The fluid had a specific gravity of 1.022 and contained 5,250 white cells per cubic millimeter, of which 82 per cent were polymorphonuclear cells, 10 per cent were lymphocytes and 8 per cent were unclassified. A smear of the fluid showed pleomorphic gram-positive bacilli. This fluid was placed on ordinary mediums for culture but produced no growth. It was also placed on blood dextrose cystine agar and inoculated intraperitoneally in a white mouse and from both of these Pasteurella tularensis was isolated and identified. Fluid was removed from the left pleural cavity on two subsequent occasions (fig. 5). It had the same general characteristics as the first except that the last specimen, removed the day before death, contained 7,000 white cells per cubic millimeter.

She became rapidly worse, slipped from drowsiness into semicoma and died in a comatose state on the eighteenth day of the acute febrile illness.

Autopsy.—The left pleural cavity contained a large amount of fluid. Thin fibrinous strands of exudate loosely joined the visceral and the parietal pleura. The surface of the left lung was covered with a thick, greenish, fibrinous exudate, and at the apex a thick fibrous adhesion was found. The left lung was firm to palpation and almost completely consolidated. On cut section the entire lung, except for a few patchy areas, appeared to contain a gelatinous bronchopneumonia which on section was lobular. There was a small infarction in the lower lobe 1.5 cm. in diameter. The right lung was normal except for a small area of consolidation in the lower lobe and a fibrous adhesion at the apex.

The mediastinal, hilar and bronchial lymph glands were greatly enlarged. Several measured 3 by 1 cm. and just above the bifurcation of the trachea there was a group of nodes measuring 6 by 2 cm. The cut surface of these glands showed areas of necrosis. The hilar nodes were larger on the left side but an actual compression of a bronchus was not demonstrated. Two nodes were embedded in the pericardium, which was otherwise normal. The heart and peritoneum were normal. The liver was enlarged (1,890 Gm.) and scattered over its surface were small areas of necrosis 1 to 2 mm. in diameter. The spleen was enlarged (380 Gm.) and soft and there were a few fibrous adhesions present between its tip and the diaphragm. Cut surface showed many tiny areas of focal necrosis. Other organs, including the brain, were normal. Past. tularensis was isolated from material obtained at autopsy by Dr. John Ransmeier.

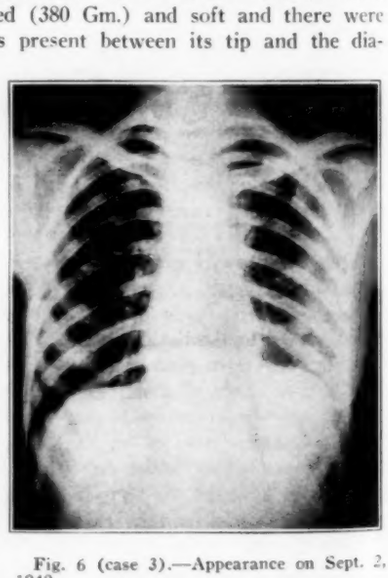

Fig. 6 (case 3).—Appearance on Sept. 2, 1940.

CASE 3.—*History.*—Miss Z. S., aged 19, white, was admitted to the wards Sept. 2, 1940 with an acute febrile illness of seven days' duration.

The girl was so ill at the time of admission that the history was obtained mainly from her family. She had apparently been in good health until August 26, at which time she complained of "drowsiness and tiredness."

August 27 she became more drowsy and began to have fever, malaise and headache. During the following week she remained in bed, continued to have fever which became gradually higher and had several chilly sensations but no shaking chills. She complained of an aching type of pain in the left upper part

of the abdomen and experienced occasional attacks of pain across the anterior part of the chest and in the left axilla.

August 31 it was noticed that she was breathing faster than usual, that she began to have irregular gross twitching movements of the hands and arms and occasionally was "talking out of her head." Two days before admission her speech became

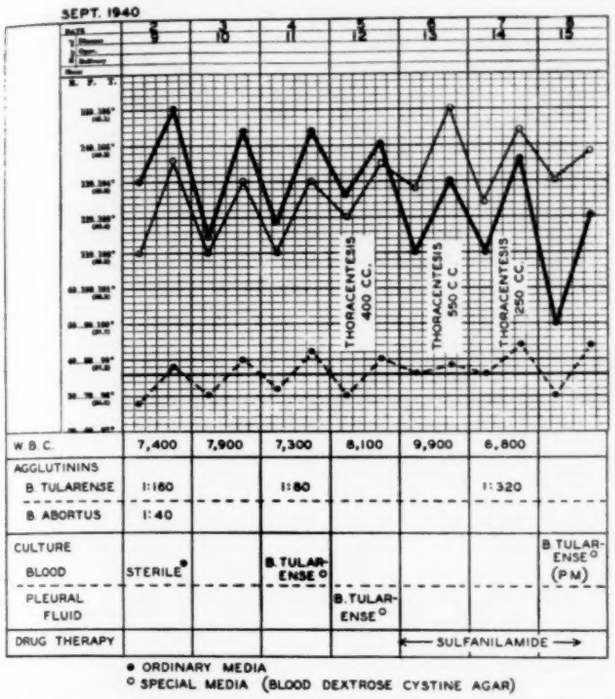
SEPT. 1940
THORACENTESIS 400 CC.
THORACENTESIS 550 C.C.
THORACENTESIS 250 CC.
W.B.C. 7,400 7,900 7,300 8,100 9,900 6,800
AGGLUTININS
B. TULARENSE 1:160 1:80 1:320
B. ABORTUS 1:40
CULTURE BLOOD STERILE* B. TULARENSE° B. TULARENSE° (P.M.)
PLEURAL FLUID B. TULARENSE°
DRUG THERAPY ← SULFANILAMIDE →
* ORDINARY MEDIA
° SPECIAL MEDIA (BLOOD DEXTROSE CYSTINE AGAR)

Fig. 7 (case 3).—Curves of maximum and minimum daily values of temperature, pulse and respiration. The important laboratory data and some of the therapeutic procedures are given.

"thick" and slurred. All these symptoms continued up until admission. There was no history of any insect bites or of any kind of contact with rabbits.

Examination.—The patient was poorly developed and poorly nourished and was critically ill. She was very drowsy but could be aroused. At times she was semidelirious. Breathing was shallow and rapid and somewhat labored. No cutaneous lesions of any kind were found. There was no general enlargement of the lymph glands but small epitrochlear and axillary glands were palpable on each side. The conjunctivas were inflamed. Optic nerve heads were slightly elevated and were hazy in outline. Mucous membranes of the mouth were reddened. There was a gross tremor of the protruded tongue and slight but definite stiffness of the neck. The lungs showed signs of a high diaphragm on the left side but otherwise they were normal. The heart beat was rapid; P_2 was split; no murmurs were heard. The blood pressure was variable but was about 120 systolic and 80 diastolic. There was a good deal of voluntary guarding when the abdomen was palpated. Some generalized tenderness was present. The liver and spleen were not palpable or enlarged by percussion. There was definite muscular weakness of all extremities, especially of the arms. Reflexes were normal with the exception of the left plantar response, which was Babinski in type.

A blood study showed 7,400 white cells, with a differential count of 74 per cent granulocytes, 18 per cent lymphocytes and 3 per cent monocytes. The urine contained 1 plus albumin but was otherwise normal.

Diagnoses considered at the time of admission were typhoid, encephalitis and poliomyelitis. Lumbar puncture on the day of admission showed normal spinal fluid under normal pressure.

Roentgenograms of the chest on the day following admission showed the diaphragm high on the left and a general haziness over the left lung; no consolidation was present (fig. 6). For the next few days she continued to be critically ill. She was irrational most of the time but would occasionally respond to questions. A queer gross tremor of the arms developed which was rhythmic at times and suggestive of the type seen in Parkinson's disease. Her neck remained stiff. The spinal fluid was examined twice more and was normal.

On the fourth hospital day signs of fluid in the left pleural cavity developed and 400 cc. of slightly cloudy orange fluid was removed by thoracentesis. This had a specific gravity of 1.012 and contained 2,400 white cells, of which 60 per cent were polymorphonuclears and 40 per cent lymphocytes. No bacteria were seen on smear.

The diagnosis of tularemia was suggested by this accumulation of pleural fluid. Reaccumulations of pleural fluid, always on the left side, were removed two additional times (fig. 7), once 550 cc. and once 250 cc., and each time the fluid had approximately the same characteristics. Culture of this fluid on special mediums (blood dextrose cystine agar) yielded Past. tularensis. On the fourth hospital day roentgenograms of the chest showed some consolidation at the base of the left lung (fig. 8).

Sulfanilamide was started on the fifth hospital day. Her respirations became more rapid, she became cyanotic and comatose and was put in an oxygen tent, but we were unable to alter the course of her disease and she died on the fifteenth day of the disease.

Autopsy.—Fluid was present in each pleural cavity. There was a thick fibrinopurulent exudate covering the entire surface of the left lung, and in some areas the lung was loosely adherent to the chest wall and to the diaphragm. The surface was a grayish green with red mottling. The lung was firm and on cut section showed a lobular consolidation. There was a cavity 2 by 1 cm. in the upper lobe containing greenish necrotic material, and near the apex several tiny areas of necrosis were present. The upper and middle lobes of the right lung were adherent to the chest wall by numerous thin fibrous bands. The cut surface appeared congested but showed no consolidation. Hilar and tracheal lymph glands were moderately enlarged. They appeared in clusters, the largest gland measuring 2 by 1 cm. The mesenteric and lumbar nodes were also moderately enlarged. The liver was slightly enlarged (1,270 Gm.). It contained no areas of necrosis but on section three small adenomas were found. The spleen (260 Gm.) had scattered areas of focal necrosis from 2 to 4 mm. in diameter.

The remaining organs were normal except for small focal areas of necrosis in the ovaries and bone marrow similar to those seen in tularemia. Permission to examine the brain was not obtained. At autopsy material was obtained from which Past. tularensis was isolated by Dr. John Ransmeier, using special mediums.

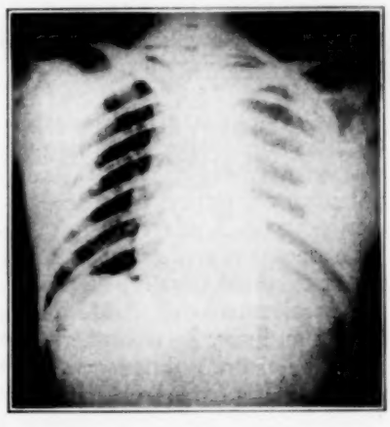

Fig. 8 (case 3).—Appearance on Sept. 5, 1940.

COMMENT

The clinical appearance of these 3 patients had certain similarities. They all had a severe febrile illness, associated with a "typhoidal" mental state, pain in the chest or upper part of the abdomen, signs of pulmonary disease and a pleural effusion. They had no ulcers or superficial sites of infection in the skin. Specific laboratory evidence for the diagnosis of tularemia was lacking until late in the illness, except when special culture mediums were used.

The difficulty in diagnosis in these 3 cases was that there was no clue to the etiologic agent, although the

patients were desperately ill. None of these 3 patients had a tularemic ulcer. This is not unusual in pulmonary tularemia, for in a series of 46 cases collected from the literature 21 presented no ulcer.[4] Blackford [2] has emphasized the difficulty in diagnosis in some cases and states that it has been his custom to measure the serum agglutination for Past. tularensis in all unusual pulmonary lesions, since several unsuspected cases have been discovered by him in that way.

The most reliable method of diagnosis, excepting culture of the specific organism, is the agglutination test, which Foshay [7] and Francis [12] point out is almost infallible after the second week. In their experience specific agglutinins always appear during the second week of the disease. However, this occasionally fails. In case 1 agglutinins for Past. tularensis were absent on the fourteenth day of the disease and on the eighteenth day agglutinins were present only in a dilution of 1:20, which is certainly not diagnostic. In case 2 specific agglutinins were absent on the fourteenth day of the disease but on that day Past. tularensis was cultured from the pleural fluid. The agglutination test was positive on the seventeenth day (fig. 5). In case 3 the agglutination test was not diagnostic, since it fell from 1:160 on the ninth day to 1:80 on the eleventh day of the disease, at a time when Past. tularensis was cultured from the blood and pleural fluid (fig. 4).

In the current classifications of tularemia the pulmonary form has been omitted as a primary type. Foshay considers pneumonia more as an integral part of the disease than as a complication.

As one becomes more familiar with tularemia one probably will come to use the same kind of anatomic-etiologic type of diagnosis that is being now used in many other infectious diseases. The terms tularemic pneumonia, tularemic pleuritis, tularemic lymphadenitis, tularemia of the skin and tularemic meningitis should be used and the awkward nomenclature ulceroglandular and oculoglandular dispensed with.

From a study of the cases presented here and those published previously, we believe that pulmonary tularemia is sufficiently clearcut to be a disease entity and sufficiently common to deserve more emphasis than it has received in the past. It should be pointed out that the criteria used in making the diagnosis of tularemia in some of the published results are not entirely acceptable. Occasionally it is difficult to prove, without culturing the organism, that a pulmonary lesion is tularemic.

The symptoms of pulmonary tularemia are variable. On the whole there are two groups of cases: The disease may begin with pulmonary symptoms or the pulmonary infection may develop during the course of another type of tularemic infection.

In one group of cases pulmonary symptoms initiate the disease and usually begin with cough, fever, malaise and occasionally chills. Many do not present cutaneous lesions and may be characterized by nothing more than a severe febrile illness with profound toxicity and drowsiness. Occasionally pleuritis may begin early (as in cases 1 and 3), attracting attention to the lungs. Pleuritic pain may be the dominating symptom. A number of cases of milder involvement, appearing as atypical pneumonia, have been discovered by the agglutination test. Several unusual cases have been recorded in which the disease was relatively mild and in which the pulmonary lesion lasted for months.

12. Francis, Edward: Tularemia, in Christian, H. A.: Oxford Medicine, New York, Oxford University Press.

In another large group of cases pulmonary tularemia develops in patients having well recognized tularemia beginning with an ulcer or an infection of the eye. Later in the course of the disease pulmonary symptoms develop and are found to involve the lungs. These cases offer no problem in diagnosis. They may be of severe or mild involvement and do not differ essentially from the first group as far as the pulmonary disease is concerned. On the whole, judging from the cases reported, the sickest patients are most likely to have involvement of the lungs.

In practically all the severe cases extreme drowsiness or a "typhoidal" state develops. In obscure cases this is helpful because its appearance strongly suggests tularemia in the absence of typhoid or typhus fever.

Pleuritis is usually present in the cases of fatal tularemic pneumonia and it is probably safe to assume that it is present in most of the severe cases. At times it is extensive. Some cases which later on become pneumonic may begin with pleuritis, as in our cases. At times the pain associated with the pleuritis may be severe and if present in the upper part of the abdomen it may suggest an abdominal surgical emergency. In at least 1 case in which jaundice was also present an unnecessary abdominal operation was performed.[13]

A diagnostic sign of great value is the development of a pleural effusion. In cases 2 and 3 removal of pleural fluid enabled us to suspect strongly the correct diagnosis at a time before diagnostic bacteriologic and serologic evidence was available. The character of the fluid is usually similar to that described in the present cases. It is usually pale yellow, slightly cloudy fluid and never grossly purulent. The specific gravity is always higher than 1.017, according to Blackford and Casey,[5] although in 1 of our cases it was 1.012. The total cell count is usually rather low, from 2,000 to 5,000 per cubic millimeter. Cell counts above 10,000 are unusual (Blackford and Casey [5]).[14] The cells are predominantly polymorphonuclear leukocytes, the percentage varying from 60 to 82 per cent in our cases. The accumulations of pleural fluid are usually moderate in amount but may be large. In patients suspected of having tularemia, pleural fluid should be carefully watched for and removed for study as a diagnostic procedure.

It is our feeling that pleural fluid would be discovered and removed more often if its diagnostic importance was generally appreciated. Occasionally the organisms can be found by a gram stain of the fluid. In case 1 we observed what was probably Past. tularensis, but the organisms were rare and their presence was discounted when the routine culture of the fluid showed no growth. In case 2, the organisms were seen on stained smear without difficulty, but not in case 3.

A valuable procedure which has been added to the bacteriologic routine of this clinic by Dr. John Ransmeier is the use of blood dextrose cystine agar medium in suspected cases of tularemia. We have found this special medium extremely useful in proving several difficult cases (not reported here) by culturing the organisms from the blood or pleural fluid. Experience with this medium is reported elsewhere.[15]

13. Verbrycke, J. R., Jr.: Tularemia, with Report of a Fatal Case Simulating Cholangeitis with Postmortem Report, J. A. M. A. **82**: 1577 (May 17) 1924.

14. In a case of pulmonary tularemia recently seen by us but not reported here, the cell count of the pleural fluid was 20,000 per cubic millimeter.

15. Ransmeier, J. C., and Schaub, Isabelle G.: The Direct Cultivation of Bacterium Tularense from Human Blood Drawn During Life and at Autopsy, Arch. Int. Med. **68**: 747 (Oct.) 1941.

Cough is usually present in pulmonary tularemia but is not one of the dominating symptoms in most cases. Most commonly it is moderate, hacking and nonproductive. At times sputum is moderate in amount and mucopurulent. Infrequently it is blood tinged. Rarely large amounts of sputum have been reported in association with a large cavity or abscess.

In only 1 reported case has Past. tularensis been isolated from the sputum,[16] but the organism has been demonstrated frequently from the pulmonary lesions at autopsy. Since McCoy's[17] description of tularemia as a "plaguelike disease of rodents," many clinicians have lost sight of the fact that tularemia has a great deal in common with plague. The morphology of the two organisms is very similar. Both diseases have animal reservoirs and insect vectors. Both diseases cause enlarged tender lymph glands ("bubonic" plague, "glandular" tularemia), which may later become necrotic and suppurate. In the course of the glandular type of each disease pneumonia and pleuritis may develop secondarily.[18] Both diseases have a septicemic type and a pneumonic type. In plague the primary pneumonic type is well known and greatly feared. In tularemia the primary pneumonic type is not well known and there is some doubt about whether it occurs except with great rarity.[19] The type of pulmonary consolidation in each is lobular and confluent.[20] As a mode of spread the sputum has never been considered important in pulmonic tularemia. This may be due to the relative infrequency of the disease. However, the incidence of pulmonary tularemia is increasing in this hospital, and from the published reports it is possible that it is increasing generally.

With the outlook of large collections of people in confined areas during the present war emergency, a situation enhancing the spread of respiratory diseases, it is well to consider the possibility of pulmonary tularemia appearing in epidemic form. So far no case has been reported in which the spread of the disease has been proved to be by way of the sputum, but under the proper conditions this is possible.

Physical signs of pneumonic tularemia depend on the type of lesion present. Two kinds of parenchymal pulmonary disease occur—pneumonic and necrotizing. The pneumonic consolidation is described as a confluent or lobular bronchopneumonia. This is usually patchy and involves small areas which coalesce as the disease advances. The disease also produces necrosis of the lung tissue resulting in small gangrenous areas, in cavities of various sizes or in abscesses of the lungs. The physical signs will, of course, vary according to the kind and extent of the lesion. In general, necrosis or cavitation of the lung tissue develops following pneumonia and occurs in those cases in which the disease is most severe. Some authors report that the heart rate is slow in relation to the elevation of temperature. This is frequently not observed, although it may be seen in the milder cases.

The white blood cell count is usually low in relation to the fever but is frequently from 10,000 to 14,000 per cubic millimeter.

The mediastinal and peribronchial lymph glands are almost always enlarged in pulmonary tularemia, sometimes to a striking degree. Symptoms caused by these glands compressing and partly obstructing the bronchi or the presence of an enlarged mediastinal shadow by roentgen examination have been reported only rarely (as in case 2). It seems to us that these complications should occur more frequently.

In considering the differential diagnosis of pulmonary tularemia, typhus fever, typhoid, atypical pneumonia, acute pleuritis from any cause and, in the more chronic cases, tuberculosis must be kept in mind.

16. Bunker, C. W. O., and Smith, E. E.: Tularemia: Report of Four Cases, One Fatal, with Autopsy Report, U. S. Nav. M. Bull. **26:** 901 (Oct.) 1928.
17. McCoy, G. W.: A Plague-like Disease of Rodents, Public Health Bulletin 43, United States Treasury Department, Public Health Service, 1911.
18. Shattuck, G. C.: Plague, in Cecil, R. L.: Text Book of Medicine, Philadelphia, W. B. Saunders Company, 1940.
19. Reimann, H. A.: The Pneumonias, Philadelphia, W. B. Saunders Company, 1938. Blackford and Casey.[5]
20. Wu, Lien-Teh: Treatise on Pneumonia Plague, Geneva, League of Nations, Health Organization, 1926.

SURGEON AND ANESTHETIST

THEIR MUTUAL RELATIONSHIP

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Operative surgery, as we know it today, is the product of the last seventy-four years, for it was conceived by the publication of Lister's[1] work in 1867. The surgeon himself, however, had long since won the respect and esteem of his colleagues to a degree which would have been inconceivable in the days of "physician apothecaries" and "barber surgeons." That he did so was probably due to the fact that the early surgeon was learned in anatomy and skilled in clinical observation. His colleagues recognized in him a man who had read widely, had observed carefully and had thought deeply. Therefore, even in days when any exhibition of his technical skill almost invariably resulted in a death from "hospital gangrene," his opinion was respected by his confrères. Thus, when the work of Semmelweis, Pasteur and Lister on infection and that of Long, Morton and Simpson on anesthesia had provided the prerequisites, the technical aspect of surgery—its operative practice—grew up rapidly and smoothly because it was a tool in the hands of men competent to use it.

In anesthesia, unfortunately, the reverse has been true. Morton's demonstration startled the medical profession in all countries, but not sufficiently, it seems, to have attracted the undivided attention of its keener minds. With the exception of a few such men as Snow and Hewitt the profession saw in anesthesia merely a technical advance ordained for the convenience of the surgeon. It is strange that medical men should have regarded so lightly the production of a state which closely simulates impending death and greatly modifies the function of the respiratory and circulatory systems. The physician scorned to stoop to such manual labor; the surgeon could not allow so minor a matter to distract him from his rapidly expanding art. There is evidence[2] that, in one ancient institution, surgeons operated without anesthetics for some years after their discovery because of a divergence of opinion with the house committee as to whether it was the function of the apothecary or that of the house surgeon to administer the anesthetic. It remained for an obstetrician and a general practitioner to devote themselves exclusively to this new phase of medicine. Not until the beginning of this century did medical men become interested in studying the behavior of the systems of the human

From the Department of Anesthesia, State of Wisconsin General Hospital.

1. Lister, Joseph: On the Antiseptic Principle in the Practice of Surgery, Lancet **2:** 353-356 (Sept.) 1867.
2. Morris, E. W.: A History of the London Hospital, ed. 1, London, 1910, pp. 172-174.

body when in a state of artificial unconsciousness. In the intervening years the anesthetist drifted into a position in which he was merely a technician. He was, as it were, the "chauffeur" of the surgeon's car. It was his duty to drive recklessly, fast or slowly as his "owner" demanded. If a tire burst or if a bearing burned out because the "owner" had declined to allow the crank case to be refilled with oil, that was the responsibility of the "owner" and not of the "chauffeur." When and if some serious catastrophe occurred the "owner," instead of consulting the "chauffeur," called in the "service manager of the manufacturing firm" in the person of an internist. Such a consultant may possess more academic knowledge than the chauffeur but seldom has as much practical experience of the immediate problem. Moreover, such treatment soon stifles all initiative or enthusiasm in the chauffeur. Economically the anesthetist is as dependent on the "good will" of his surgeon as is the chauffeur on that of the owner.

In the United States this dependence resulted in the employment of the laity as anesthetic technicians. The function of these technicians was to be the employees of the surgeon and to do as he bade them; and it was assumed that his omniscience was such that he could perform an intricate and exacting operation and simultaneously exercise an adequate supervision both of the patient's condition and of the technic of administration of the anesthetic. In England, where the state of the law prohibits unqualified assistance and anesthesia comes within the legal definition of "the practice of medicine and surgery," the lay technician could not exist. Yet it soon became evident that there is but little difference in practice between a layman highly skilled in a manual art and an indolent person whose former medical training has been allowed to undergo a process of atrophy of disuse.

These facts probably account for the startling contrast between the development of surgery and that of anesthesia. In the former case the devotion of keen minds to the subject secured its rapid and progressive development. In the latter the subject remained almost at a standstill for the first sixty years after its inception. Of recent years, however, there has been a renaissance of interest in and original work on the subject of anesthesia which has brought forth greater advances in the last thirty years than had occurred in the previous seventy. These advances have been sufficiently spectacular to cause Lahey [3] to write:

> The field of anesthesia within the last few years exclusive of thoracic surgery has perhaps shown greater progress and development than that of surgery itself.

Moreover, they have fundamentally altered the relationship between anesthetist and surgeon. Whether this alteration has been for good or ill has depended in the main on the attitude of the surgeon. The true servant is he who allows no consideration to take precedence over the best interests of his patient and his art. At some time or another we have all been guilty of allowing our personal pride to supplant the patient's interest. Some older surgeons have fallen into this error when the services of a trained professional anesthetist first became available to them. They have done so partly because they could not conceive of an anesthetist as having any but a purely technical contribution to make, and partly because they were accustomed to exercise absolute control of everything in the operating room and were unable to overcome the habit. In some cases the anesthetist himself has invited such treatment by gratuitous interference in purely surgical matters or by his ignorance of them. Where the advances of anesthesia have been put to good use it has usually been because of the encouragement of a surgeon of vision who could perceive the advantages which would accrue to his patients and his art. It has been my good fortune to be associated with several such, and I would be ungrateful indeed did I not acknowledge my debt to them.

3. Lahey, F. H.: Progress of Anesthesia, editorial, Am. J. Surg. **34**: 405-406 (Dec.) 1936.

ATTRIBUTES OF A SKILLED ANESTHETIST

How then can an anesthetist best serve the interests of the patient, of the surgeon and of his subject? In the first place he must know his own specialty thoroughly both in its practical and its academic aspects. If he is merely a good technician the scope of his services will be severely restricted. If he is deeply learned yet cannot give excellent anesthetics by any known method and with any agent he brings both himself and his subject into contempt. Furthermore he must have a sound grasp of the fundamentals of surgery, medicine and obstetrics. This should include sufficient direct experience of operative work to enable him to understand the difficulties with which a surgeon has to contend. He must be able to put himself in the surgeon's place and see the situation through his eyes in any ordinary case. When he cannot do so he should seek enlightenment from the surgeon and be prepared to accept it. He must cultivate a sound opinion as to the condition of the patient at any time during the operation and should also develop a prognostic ability. These qualities can be attained only by long experience and close and accurate observation carefully recorded. The acid test of all clinical work is the after-condition of the patient. Until we are in a position to compare the results of large numbers of cases from which as many variables as possible have been excluded we cannot fairly determine the value of any agent or method. Any worker who has had occasion to make a factual statement from memory and later to compare it with the recorded facts knows how fallible is his power of recollection. Therefore anesthetists must be prepared to keep such records, to compare series of cases from time to time and to meditate upon and draw conclusions from them. This exercise in observation will enable them to return a more convincing answer to the usual question in the operating room "Is he all right?" Moreover, the trained anesthetist can by these means recognize the onset of circulatory or respiratory embarrassment and can institute the appropriate supportive treatment. Such records can be of as great interest to the surgeon as to the anesthetist; for changes observed in relation to certain phases of the operation may throw light on points in diagnosis or of operative technic.

The skilled anesthetist will keep himself informed as to the condition of the patient after operation. There are two good reasons for doing so: The first is that a careful record of postoperative complications is essential to the evaluation of technic and of opinion. The second is that the anesthetist's specialized knowledge can be of use in the diagnosis and treatment of certain postoperative complications. Being expert in the use of artificial airways and oxygen therapy, he can often prevent grave respiratory sequelae by recognizing their

onset and instituting timely prophylactic treatment. His familiarity with the technic of intubating the respiratory passages enables him to treat atelectasis by suction drainage. Pneumonia can thereby be avoided in a certain number of cases. By the use of a similar technic he can relieve the respiratory obstruction often seen in patients who lack the strength to cough up their own secretions. He can also relieve acute respiratory obstruction temporarily and advise as to the further treatment which may be necessary. He has a great experience in the administration of depressant drugs and therefore his opinion should be sought whenever questions of the expediency or the quantity of such administrations arise.

By the time he has been in practice for some years under these conditions his prognostic opinion as to the immediate hazards of a proposed operation in a given patient should be of value. In the past this attribute of an anesthetist has been neglected. When for years he has carefully observed and recorded the effects of a particular intervention he should surely be in better condition to form such an opinion than, for instance, an internist, who at most occasionally visits an operating room as a spectator. Since as a rule any anesthetist gives more anesthetics than does a surgeon perform operations, it is likely that the anesthetist's view as to the result might be a useful complement to that of a surgeon of equal seniority.

So much for his functions as they touch the operative aspect of surgery. By a process of consultation, however, the anesthetist can render other valuable services. Of all the staff he is, or should be, the most familiar with the mechanics both of normal and of pathologic respiration. Moreover he is experienced in securing a free airway, in the administration of gases and in the maintenance of respiratory exchange by artificial means. He should therefore be consulted with regard to any case of respiratory failure, depression or obstruction. In this capacity he can profitably supervise all administrations of gaseous therapy and the use of mechanical respirators. Because of his training in regional analgesia he is adept in blocking the various nerves. This faculty can be put to good use in consultation for purposes both of diagnosis and of treatment. The greater the anesthetist's grasp of clinical medicine, anatomy and physiology, the more profitable will be his services in this respect. Where spinal analgesia or intravenous anesthesia is desired in the diagnosis of vascular disease he is, logically, the person to consult. Some persons have suggested that, in addition to these duties, the anesthetist should have full charge of the arrangements for the storage and transfusion of blood. He must naturally be familiar with the process, particularly as regards the technic of transfusion. Yet many problems of serology and bacteriology arise which are outside the normal purview of the anesthetist; and if he carries out the functions already outlined he will be unable to find the time for such onerous further duties.

Lastly, the anesthetist and the radiologist share one great asset: by the very nature of their functions they are true consultants. That is to say, they treat a patient only at the request of a colleague. Rarely does a patient consult either except at the suggestion of another medical man. The position of a consultant should be that, in return for the assumption that he possesses a definite mastery of his own field, he concedes any pretense of serious knowledge of any other branch of medicine. He must, naturally, know something of everything, but he does so as a matter of general information and intelligence. He acknowledges that his opinion in any other branch of medicine is not worth mentioning to a worker in that field. This is of particular importance in his dealings with his surgical colleagues. For if he ventures to interfere with what are purely surgical decisions he need not be surprised if the surgeons institute reprisals in the form of interference in matters which should concern only the anesthetist. A surgeon has no more right to tell an anesthetist how to obtain the conditions required for operation than has the anesthetist to tell the surgeon how a patient should be operated on. This does not mean that enlightened discussion is not of the utmost value: it is dictation and not discussion which is wrong and harmful. The anesthetist must, like all consultants, remember that he is asked to furnish a specialist's opinion on a patient under the care of a colleague. He is not "in charge of the case."

COOPERATION BY THE SURGEON

Could all surgeons but have spent a few months as members of a department of anesthesia, any remarks as to how to cooperate with an anesthetist would be superfluous. After such an experience they would know that, although the course of anesthesia is often uneventful, grave difficulties are sometimes encountered. The dramatic suddenness with which uneventful induction or maintenance can give place to desperate attempts to resuscitate a patient in extremis cannot but leave its impress on the memory. This may happen at any time without previous warning. Even the minor perplexities which they would encounter in a month should satisfy them that the patient's interests demand the enlightened vigilance of an anesthetist of full medical education and specialized postgraduate training in his subject.

There are two ways in which surgeons usually fail their anesthetist. The first of these is by a lack of comprehension of his technical problems and difficulties. By way of illustration let us take the question of impatience with the time consumed in the induction of anesthesia. This may legitimately vary from three to thirty minutes before the patient is ready for the incision. Many factors account for this great variation: the agent and method used, the individual resistance of the patient, the depth of anesthesia required for the performance of the operation, the patency of the patient's airway and the efficiency of his alveolar surface, the advisability or otherwise of tracheal intubation, and the competence of the anesthetist. Too many surgeons are prone to overlook these matters and to assume that all delay must be due to the last-mentioned factor. They rarely realize that the process of saturation of the tissues with the agent is a slow one and that the rapid production of deep anesthesia can be dangerous in itself. Their impatience, if they are in the same room, usually communicates itself to the anesthetist, who then as a rule wastes fifteen minutes in an attempt to save five. What is worse, he usually "loses his head," and it is then that accidents are liable to occur. An anesthetist was once performing a difficult and tedious induction in a patient with chronic respiratory obstruction. Through the open door of the operating roonr he heard the surgeon say to a guest "I don't care how long I wait for this patient, for I know that every five minutes Dr. —— wastes outside will save me ten in operating." Those two men understood each other and have together been able

to do things which, without that perfect mutual understanding and confidence, would almost certainly have involved the death of the patient. Too few surgeons realize the close connection between reflex glottic spasm and intense surgical stimulus. The most fertile source of disagreement centers round the question of how much relaxation should be provided, having due regard for the patient's condition. This issue has been discussed in a recent essay [4] and will not be reopened here.

Too much importance has been attached to the anesthetic agent and too little to the hands which use it and their degree of skill. Chloroform in some hands is safer than ether in others, and for this reason most of the figures hitherto quoted as arguments of "safety" are misleading. Each case is a problem in itself and therefore no one agent or method will in the long run prove as safe and satisfactory as a judicious selection for a given patient. Surgeons, of all men, should have reason to know that a balanced judgment is more important than a method or a drug.

This brings us to the second and last point: that the all important factor is the attitude of the surgeon toward his anesthetist. It has been admirably summed up by a distinguished plastic surgeon: [5]

> The surgeon who attempts cleft lip and palate surgery without the help of a well organized team is courting disappointment. He may justifiably rank himself captain of this team but he should not consider himself as seriously more important than any one of its members. Intimate collaboration between surgeon and anesthetist is of prime importance. The anesthetist makes the surgeon's work possible; the surgeon should see to it that he does nothing which will render the anesthetist's work more difficult.

The essentials of their relationship are mutual professional confidence, understanding, frankness, honesty and courtesy, with fairmindedness on both sides. The anesthetist stands ready and willing to help the surgeon: to do so he must be treated as an adult and not as a foolish child. A technician cannot be treated as a colleague in the fullest sense, but these essentials can always be fulfilled between colleagues. The highest and best fruits of this relationship are seen when intimate personal friendship is superadded to these desiderata. It is at this mark that we must aim.

4. Gillespie, N. A.: Relaxation: A Meditative Essay, Anesthesiology **1**: 292-299 (Nov.) 1940.

5. Kilner, T. P.: Cleft Lip and Palate Repair Technic, St. Thomas's Hosp. Rep. **2**: 127-140, 1937.

The Body Anatomic and the Body Politic.—Despite its shortcomings, its incompleteness, its groping, medicine stands today as one of the great triumphs of the human spirit. To contemplate medicine in time of war is to be reminded of the vast discrepancy that exists between our knowledge and control of the human body anatomic and our knowledge and control of the human body politic. Men associated in nations have united in vast cooperative projects of destruction, they have engaged their mechanical and engineering skills, their physical, chemical and biological knowledge, in titanic efforts to render human life unendurable if not impossible. Men associated in research teams, in laboratory staffs, in international academies and societies of medical and other life sciences have sought just the opposite ends. They have endeavored to apply all the technics of physics, chemistry and biology to the alleviation of disease, the preservation of life and the postponement of death. It is fair to say that never in the history of civilization has man been so insecure against the machinations of his fellow human beings and so safe against the threats of disease.—Gray, George W.: The Advancing Front of Medicine, New York, McGraw-Hill Book Company, Inc., 1941.

PREMARITAL EXAMINATION LAWS IN THE UNITED STATES

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With the passage of six new premarital examination laws by 1941 legislatures, thirty states now require that a certificate of examination be presented before marriage licenses may be issued. All of these measures have one objective in common; namely, prevention of the spread of syphilitic infections through the vehicle of marriage. A number of them are aimed also at curbing other venereal diseases, and a few undertake to reduce the incidence of tuberculosis or mental disorders as well. Most of them, however, resemble Connecticut's successful law, adopted by that state in 1935, to the extent of requiring a blood test for syphilis.

The diversity of legal and administrative details which characterizes the premarital laws of the various states is not surprising when one considers their separate origin in as many legislatures. In some instances original bills had to be modified to satisfy local opposition. Several states had early but ineffective laws on their books which necessitated amendment or repeal. Variations in the required procedures of the several laws would be a matter of less concern if every one chose a mate within the boundaries of his own state. Interstate marriages, however, are common in normal times and are now considerably increased as a result of the translocation of many eligible young men in the army camps. While all the premarital laws are relatively simple in their modus operandi for residents of their own states, some of them contain stipulations which interpose serious obstacles in the way of out of state applicants. These are not lessened by the difficulty of securing authentic information about the procedure required in another state. The layman often does not understand that he can best secure this information from the health department of the state in which he expects to marry. He is most likely to inquire of a local physician or the local health department. The data presented in tables 1 to 4 inclusive have been distributed to local health administrators in Illinois to assist them in replying to such queries.[1] They are here offered to a larger audience in the hope that they may fill a need in other states.

It seems to us a good time, moreover, to examine critically the existing premarital measures and to inquire what provisions promote and which ones hamper venereal disease control. The lack of reciprocity in some states relative to premarital laboratory tests performed in other states is one point which has aroused considerable discussion and some remedial action on the part of state health officials. This is only one aspect, however, of the problem of nonreciprocity. The restrictive license and residence requirements which apply to the examining physician in certain states impose almost as great difficulty in the way of interstate marriages. Numerous lesser complications arise from the mere diversity of procedural details under different laws.

From the Division of Laboratories, Illinois Department of Public Health.

1. Revision of tables presented at Conference of State and Provincial Laboratory Directors in October 1940 (Detroit) and October 1941 (Atlantic City, N. J.).

The questions discussed here are those which have arisen most frequently in our own experience. Briefly they are: 1. What is the scope of the examination? 2. What laboratory tests are required? 3. What laboratories are approved for making the required tests? 4. Who is empowered to examine? 5. Under what circumstances, if any, may infected persons, or those whose laboratory tests are reported as positive, secure licenses to marry?

1. WHAT IS THE SCOPE OF THE EXAMINATION?

A fully authoritative discussion of premarital examination laws and their operation could be made only on the basis of a first hand study of each in the state which adopted it. This applies particularly to the scope of the examinations required by the several measures. The administration and, to a large extent, the interpretation of technical points in each instance have been properly entrusted to the health department of the state concerned. When questions requiring interpretation have arisen in the course of the compilation, they have been submitted to the respective state health departments for their opinions. It is, nevertheless, still possible that misinterpretations have occurred in our exposition. If any are discovered by our readers, we will appreciate being informed of them.

Premarital examination laws are of less recent origin than is commonly realized. The state of Washington adopted the pioneer measure in 1909, which was repealed the next year. The legislatures of North Dakota, Oregon and Wisconsin, however, in 1913 approved bills which have remained in force until recently amended or replaced by improved measures. Several other states followed their example during the next few years: Alabama in 1919, North Carolina and Wyoming in 1921, Louisiana in 1924 and Texas in 1929. Considerable credit should be given to the promoters of these early laws in spite of the fact that they were relatively ineffective. They rendered at least one important contribution in pointing out mistakes to be avoided. Their most serious shortcomings were due to failure to make laboratory tests mandatory and to declare a penalty for nonobservance. Each of them, moreover, was made applicable only to the male candidate for a marriage license.

The first really effective prenuptial examination statute was that passed by the Connecticut legislature in 1935. Requiring that both applicants for marriage license submit to blood tests for syphilis, this law was made enforceable by providing for the fining and imprisonment of any local registrar who should issue a license without first receiving from both applicants certificates of examination by licensed physicians and reports of laboratory tests, declaring their freedom from syphilis. It is to be noted that while the text of this law does not stipulate an examination by the physician, the certificate to be signed by the latter declares that the applicant has been examined and, in the opinion of the examiner, is free from syphilis in a form in which it may become communicable.

TABLE 1.—*Scope of Examination*

State	Conditions to Be Examined For	Laboratory Tests Required
Alabama	All venereal diseases [1]	None [2]
California	Syphilis	Serologic test for syphilis
Colorado	All venereal diseases	Serologic test for syphilis
Connecticut	Syphilis	Serologic test for syphilis
Illinois	All venereal diseases	Serologic test for syphilis; microscopic smear for gonorrhea
Indiana	Syphilis	Serologic test for syphilis
Iowa	Syphilis [3]	Serologic test for syphilis [3]
Kentucky	Syphilis	Serologic test for syphilis (dark field "when moist lesions are present")
Louisiana	All venereal diseases [1]	None [2]
Maine	Syphilis	Serologic test for syphilis
Massachusetts	All infectious diseases dangerous to the public health [4]	Serologic test for syphilis
Michigan	Syphilis, gonorrhea, chancroid	Serologic test for syphilis (dark field and gonorrheal smear at discretion of examining physician)
New Hampshire	Syphilis	Serologic test for syphilis
New Jersey	Syphilis	Serologic test for syphilis
New York	Syphilis	Serologic test for syphilis
North Carolina	All venereal diseases, tuberculosis, epilepsy, idiocy, imbecility, or other mental imbalance	Serologic test for syphilis
North Dakota	Syphilis	Serologic test for syphilis
Ohio	Syphilis [5]	Serologic test for syphilis [5]
Oregon	All venereal diseases, epilepsy, feeblemindedness, insanity, drug addiction, alcoholism	Serologic test for syphilis; (gonorrheal smear when prescribed by examining physician)
Pennsylvania	Syphilis	Serologic test for syphilis
Rhode Island	Syphilis, gonorrhea, tuberculosis	Serologic test for syphilis
South Dakota	Syphilis	"Microscopic and serologic tests for syphilis"
Tennessee	Syphilis (gonorrhea and chancroid if history of infection)	Serologic test for syphilis; dark field if prescribed by examining physician (tests for gonorrhea or chancroid if history of infection)
Texas	All venereal diseases [1]	None
Utah	Syphilis	Serologic test for syphilis
Vermont	Syphilis	Serologic test for syphilis
Virginia	Syphilis	Serologic test for syphilis
West Virginia	Syphilis	Serologic test for syphilis
Wisconsin	All venereal diseases [6]	Serologic test for syphilis [6]
Wyoming	Syphilis, gonorrhea, chancroid [1]	Serologic test for syphilis [1]; microscopic smear for gonorrhea [1]

1. Applies to male applicants only.
2. Unless prescribed by examining physician.
3. Applicant from another state in which premarital examination and laboratory tests are required must fulfil his own state law in lieu of Iowa's and must submit certificate used in his own state signed by the examining physician and notarized. Iowa nonresident examination form is required for residents of states which have no premarital examination laws.
4. A list of forty-two such diseases is published by the Massachusetts Department of Public Health. Physicians must inform both parties of hazards involved in their marriage if any of these diseases is present, but marriage license may not be refused because of its occurrence.
5. Applicant from another state in which examination and laboratory tests are required before marriage must fulfil requirements of his own state and submit a certificate from an official in his own state who is empowered to issue marriage licenses, stating that he is eligible for marriage in that state. Residents of state having no such legislation must proceed to Ohio and conform with same requirements as citizens of latter state.
6. Examination required of male applicants only; blood test of both sexes. Physician may require male to have laboratory tests for other venereal infections.

The immediate success of the Connecticut law prompted other states to enact similar measures. Among those which had passed the earlier ineffective type of laws, North Carolina, North Dakota, Oregon and Wisconsin have either amended them or replaced them with statutes specifying laboratory tests of both sexes and establishing penalties for nonobservance. Alabama and Louisiana retain without alteration their original laws, applicable only to males, requiring laboratory tests only when deemed necessary by the examining physician and declaring no penalty for failure to conform. Texas also has made no modification of its first measure, which contains provisions similar to those of Alabama and Louisiana, except that under no circumstances may laboratory tests be required. Wyoming's original law, which likewise applies only to males, has been revised not through legislative amendment but by a state board of health ruling which requires physicians to "secure evidence of freedom from a communicable form of syphilis by a recognized serological laboratory blood test and . . . of gonorrhea by a negative microscopic test for gonococci."

As shown in table 1, seventeen of the thirty states which have adopted premarital legislation require examination only for syphilis. Most of the remainder specify either that (1) syphilis, gonorrhea and chancroid or (2) all of the venereal diseases must be looked for. New Hampshire's enactment, like that of Connecticut, does not specify any sort of physical examination, but the certificate signed by the physician declares that an examination for syphilitic infection has been made and that a laboratory blood test has been performed. A separate section of the marriage laws of New Hampshire forbids persons to marry who have been reported to the state board of health as suffering from gonorrhea or syphilis and also forbids town clerks, when so informed, to issue a marriage certificate to such persons without consent of the board of health. Wisconsin's law has certain peculiarities that are due to the manner in which the original law was amended. Prior to the amendments of 1937 and 1939 this law required the examination of all male applicants for the presence of any of the venereal diseases. The recent amendments make blood tests for syphilis a requirement for both applicants for a license but fail to specify a physical examination for the female. The certificate, therefore, contains two statements requiring separate signatures when a male applicant is examined, the first pertaining to the physical examination, the second to the serologic test for syphilis. For the female applicant, of course, only the second statement applies.

While most of the enthusiasm for premarital examination laws has arisen coincidentally with the recent popular interest in venereal disease control, a few states have incorporated these measures into a more broadly eugenic program. North Carolina and Rhode Island include tuberculosis among the diseases to be examined for, and a license is refused if either applicant is found to be in an infectious stage of the disease. North Carolina and Oregon also require that epilepsy and the several forms of mental defectiveness be looked for, and Oregon adds drug addiction and chronic alcoholism to the list of maladies for which applicants may be refused a license to marry. New Hampshire law forbids the marriage of any epileptic or mental defective, except it be a woman of 45 or over, and further forbids any clergyman or officer to issue a marriage certificate in such a case.

The most recently adopted premarital law, which became effective in Massachusetts on Nov. 1, 1941, is broader than all of its predecessors in the scope of the examination which it requires. Furthermore, it does not forbid the marriage of persons who are infected with syphilis or other communicable diseases even though one or both parties are in a stage in which such disease may be transmitted. The provision just mentioned is somewhat similar to a section of the Virginia law (discussed in section 5), which, however, requires that the infected applicants agree to submit to a prescribed course of treatment. Examining physicians are expected to look for "evidence of any infectious disease declared by the state department of public health to be dangerous to the public health" and, if any is found, to inform both parties of the hazards involved in their intended marriage. A list is issued by the Massachusetts Department of Public Health of forty-two diseases which are declared to be dangerous to the public health.

2. WHAT LABORATORY TESTS ARE REQUIRED?

It has been noted in the preceding section that the first really effective premarital examination measures made a laboratory test for syphilis a requirement for both sexes and provided for enforcement by fixing responsibility on the license-issuing official for seeing that the requirement is observed and establishing penalties for nonconformance.

Twenty-six states, as table 1 shows, have made the premarital blood test a legal requirement for both sexes and have declared penalties for failure to conform. Wyoming's pioneer law, as suggested in the preceding section, has no such clause, but the board of health of that state adopted a regulation in 1931 redefining "What constitutes a proper examination for a marriage certificate?" which stipulates that all male candidates for marriage licenses shall submit to laboratory tests for syphilis and gonorrhea. However, in the absence of penalties for nonobservance this ruling has been difficult to enforce. It has also been stated that in Texas no premarital laboratory tests are required, while in Alabama and Louisiana they are demanded only when deemed necessary by the examining physician.

Dark field examinations are not mentioned in most of the laws now in effect but are specifically required under the Kentucky law "when moist lesions are present" and in Michigan and Tennessee "where indicated." In the South Dakota statute it is suggested by the phrase "standard microscopic and serological tests for syphilis." While implied in the pioneer laws of Alabama and Louisiana, there is no apparent means of enforcement in either of these states.

Only two states have made an absolute requirement of any laboratory tests other than a serologic test for syphilis. In Illinois "microscopical examinations of smears from the genitalia for the gonococcus of gonorrhea" are specified in the text of the law. Oregon's measure is so worded as to require microscopic examination of "smears from the mucous membranes of the sex organs" only "when considered necessary" by the examining physicians. In the actual administration of the law, however, this examination has been made compulsory.

There has been no tendency in any of the laws thus far framed to grant official recognition to the serologic

test of one author exclusively. Although a few statutes make generic reference to particular technics, in none of them is approval restricted to a single test. In most instances the state health commissioner or state department of health has been delegated authority to declare what tests are to be considered standard. It is not surprising that under such circumstances a high degree of reciprocity is in effect between states as far as the acceptability of particular tests is concerned. The position taken by the Illinois Department of Public Health, "approving laboratories rather than tests," seems to represent a common attitude. Several state health standpoint of reciprocity, contributing largely to an appreciation of the dependability of the tests named.

3. WHAT LABORATORIES ARE APPROVED?

In most states the responsibility of approving laboratories for performance of prenuptial tests has been vested in the state board of health, the state department of health or the state health commissioner. Indiana's premarital statute differs somewhat, however, making the stipulation that such tests may be made in "laboratories meeting standards prescribed by the pathology department of Indiana University School of Medicine

TABLE 2.—*Approved Out of State Laboratories and Approved Tests*

State	Laboratories Approved Outside of State	Approved Blood Tests
Alabama	None	"Recognized . . . laboratory tests"
California	State, territorial, provincial (Canadian) laboratories and U. S. P. H. S., Army and Navy laboratories	Kolmer, Eagle or Craig fixation; Kahn, Kline, Hinton, Eagle precipitation
Colorado	State and local laboratories approved by own state health department	None specified
Connecticut	None [1]	Wassermann, Kahn, Kline, Hinton
Illinois	State laboratories; U. S. Army, Navy, Marine, and P. H. S. laboratories; District of Columbia and New York City laboratories	"Any test routinely employed by an approved laboratory"
Indiana	State Health Department laboratories	Kolmer and Eagle fixation; Kahn, Kline, Hinton, Eagle precipitation, Mazzini
Iowa	Same as approved by Illinois (above)	"Standard microscopic and serologic tests for syphilis"
Kentucky	None	Kolmer; Kahn, Kline, Hinton, Eagle precipitation
Louisiana		"Recognized . . . laboratory tests"
Maine	State Health Department laboratories	Kahn, Hinton
Massachusetts	Same as approved by Illinois	Standard serologic test for syphilis
Michigan	List issued by Michigan Department of Health	None specified
New Hampshire	Official state health and U. S. P. H. S. laboratories and local laboratories approved by own state health department	Wassermann or Kahn
New Jersey	By arrangement with New Jersey Health Department	Wassermann, Kahn or other standard test
New York state	None	None specified
New York city	Same as approved by Illinois (above)	None specified
North Carolina	State laboratories and local laboratories approved by own state health department	Kolmer and Eagle fixation; Kahn, Kline, Hinton, Eagle precipitation
North Dakota	None	Not specified
Ohio	State and local laboratories approved by own state health department in states which require blood test; none approved in other states	Not specified
Oregon	State and local laboratories approved by own state health department	Kolmer and Kahn
Pennsylvania	State Health Department laboratories	Wassermann, Kahn, Kline, Hinton, Eagle precipitation, Boerner-Lukens
Rhode Island	All state laboratories; local laboratories only by arrangement with Rhode Island Health Department [2]	Wassermann, Kahn or other standard laboratory test
South Dakota	State and local laboratories approved by own state health department	"Standard serologic test for syphilis"
Tennessee	State and territorial laboratories; U. S. P. H. S., Army and Navy laboratories; District of Columbia laboratories; laboratories of author-serologists (Eagle, Hinton, Kahn, Kline, Kolmer)	Eagle, Hinton, Kahn, Kline, Kolmer
Texas	None	None
Utah	State health department laboratories	Any standard test
Vermont	State laboratories; District of Columbia and New York City laboratories	Not specified
Virginia	State laboratories; U. S. P. H. S. laboratories	"A standard serologic test"
West Virginia	State health department laboratories	"Any standard serologic test for . . . syphilis"
Wisconsin	State or local laboratories approved by own state health department (affidavit of approval required, signed by officer of state health department)	"Standard blood test for syphilis"
Wyoming	None	None specified

1. Connecticut has approved the laboratories of the Illinois Department of Public Health and presumably other out of state laboratories for the performance of blood tests for men in the armed services.
2. Special routine for reporting by out of state laboratories. Information obtainable from Chief, Division of Laboratories, Rhode Island Department of Health.

departments have given approval to those tests which received recognition in the evaluation studies [2] of the U. S. Public Health Service, namely the Kolmer and Eagle modifications of the Wassermann test, the Kahn standard, Kline diagnostic, Eagle and Hinton precipitation tests. These studies were timely indeed from the and approved by the Indiana state board of health." In North Dakota no system for approving laboratories is provided by the measure, which specifies that "a standard serological test . . . for syphilis approved by the state health officer . . . shall be performed by the state department of health." The early laws adopted in Alabama, Louisiana, Texas and Wyoming likewise require no program of laboratory approval, since they make no rigid stipulations regarding laboratory tests.

Approval of intrastate laboratories in some states is based on inspection of facilities and the sending out of frequent check specimens. This is probably as effective and economical a method as any yet tried. For out of state laboratories, however, no such basis of approval

2. Cumming, H. S.; Hazen, H. H.; Sanford, A. H.; Senear, F. E.; Simpson, W. M., and Vonderlehr, R. A.: Ven. Dis. Inform., reprint 52, June 1935. Parran, Thomas; Hazen, H. H.; Sanford, A. H.; Senear, F. E.; Simpson, W. M., and Vonderlehr, R. A., ibid., reprint 61, January 1937. Hazen, H. H.; Parran, Thomas; Sanford, A. H.; Senear, F. E.; Simpson, W. M., and Vonderlehr, R. A., ibid., reprint 66, May, 1937. Parran, Thomas; Hazen, H. H.; Mahoney, J. F.; Sanford, A. H.; Senear, F. E.; Simpson, W. M., and Vonderlehr, R. A., ibid. reprint 72, August 1937. Hazen, H. H.; Parran, Thomas; Mahoney, J. F.; Sanford, A. H.; Senear, F. E.; Simpson, W. M., and Vonderlehr, R. A., ibid. **21**: 171 (June) 1940.
3. Footnote deleted on proof.

is afforded. This fact, probably more than any other, has impeded the establishment of reciprocal recognition of premarital tests performed by laboratories in different states. A few states (Kentucky, New York outside New York City and North Dakota) will accept no reports of premarital tests performed in laboratories outside their respective state boundaries, as shown in table 2. It is of interest to note, however, that in no state except North Dakota is there any legal obstacle to the approval of out of state laboratories for the performance of these tests. It has been pointed out that the North Dakota act requires that they be made by the North Dakota State Department of Health. It seems tion 4 and table 3) and must then wait five days for the issuance of the license (see table 4).

The New Jersey and Michigan departments of health have approved selected laboratories in other states and invite negotiation looking toward the approval of others. Michigan's health department has issued an extensive list of approved laboratories, which includes most of the state laboratories and a good many large local ones.

In more than half of the states which have premarital measures, tests performed in the laboratories of any other state health department are regarded as acceptable (California, Colorado, Illinois, Indiana, Iowa, Maine,

TABLE 3.—*License and Residence Restrictions; Sources of Examination Forms*

State	Who May Examine? (License and/or Residence Requirements)	Certificate Forms Obtainable from (a) State Health Department; (b) County Clerks; (c) Approved Laboratories; (d) Other Sources
Alabama	Alabama license required [1]	(a)
California	Any licensed physician	(a); (c); (d) officials authorized to issue marriage licenses
Colorado	Any licensed physician	(a); (b); (c)
Connecticut	Connecticut license required [2]	(a); (c)
Illinois	Illinois license required [3, 4]	(b)
Indiana	Any licensed physician	(a); (d) clerks of circuit courts
Iowa	Any licensed physician [5]	(a); (d) clerks of district courts [5, 8]
Kentucky	Kentucky license required [6, 7]	(a); (d) county and city health departments
Louisiana	Any licensed physician	(d) authorized licensing officers
Maine	Maine license required [11]	(a); (d) state health laboratories
Massachusetts	Massachusetts license and active practice in that state or active medical commission in armed forces of United States	(a)
Michigan	Any licensed physician	(a)
New Hampshire	New Hampshire license required [2]	(a)
New Jersey	Any licensed physician	(a); (c); (d) authorized license issuing officers
New York	Any physician licensed to practice in state in which he resides or maintains an office [7]	(a); (d) New York City Health Department
North Carolina	North Carolina license and residence required [3, 4]	(a); (d) registers of deeds [8]
North Dakota	Any licensed physician [9]	a); (d) state health laboratory
Ohio	Any licensed physician [10]	(a)[10]
Oregon	Oregon license and residence required [3, 4]	(a); (b)
Pennsylvania	Pennsylvania license required [3, 4]	(a); (d) clerks of orphans' courts
Rhode Island	Rhode Island license required [1, 4]	(a); (d) town and city clerks
South Dakota	Any physician licensed to practice in state in which he resides	(a)
Tennessee	Any physician licensed to practice in state in which he resides	(a); (b); (d) city and county health departments
Texas	Texas license; residence in county where license applied for	Form not specified
Utah	Any licensed physician	(a)
Vermont	Vermont license required [3]	(a)
Virginia	Any physician licensed in any state, territory, county, or District of Columbia	(a)
West Virginia	West Virginia license required [3]	(a); (d) state health laboratory
Wisconsin	License to practice in Wisconsin or in applicant's state required	(a)
Wyoming	Wyoming license and residence required	(a)

1. Administrative ruling, not stipulated in law.
2. Attorney general's ruling, not stipulated in law.
3. Stipulated in legislative enactment.
4. But physicians licensed in applicant's state may take specimen and have same examined in own state laboratory. (Oregon will accept report from any laboratory approved by its own state health department.)
5. See footnote 3 under table 1.
6. Law reads "physicians authorized to practice medicine in Kentucky."
7. Or commissioned medical officer of United States Army, Navy or Public Health Service.
8. Special laboratory report form for out of state examinees.
9. But law requires blood specimen to be examined by North Dakota State Health Department laboratory.
10. But see footnote 4 under table 1.
11. By 1942 amendment a licentiate of another state may sign statement if a graduate of a class A medical school.—Ed.

a safe inference, however, that the health departments of the other nonreciprocating states have taken a similar position because of a conviction that approval should be limited to laboratories over which a degree of control can be exercised.

Until recently Connecticut's law also has been administered on a nonreciprocating basis. Owing to the present military situation and the consequent dispersion of Connecticut citizens enrolled in the armed forces, some out of state laboratories [4] have been approved for the performance of the required blood tests. It is doubtful, however, whether this modification will be of much assistance to men in the service who wish to marry in Connecticut, since they must still be examined by a physician licensed to practice in that state (see section 4 and table 3) and must then wait five days for the issuance of the license (see table 4).

4. Such approval has probably been restricted to the laboratories of state health departments, but we have been unable to obtain an answer on this point from the Connecticut State Health Department.

Massachusetts, North Carolina, Ohio, Oregon, Pennsylvania, Rhode Island, South Dakota, Tennessee, Utah, Vermont, Virginia, West Virginia and Wisconsin, as well as New York City, which is empowered to approve laboratories independently of the New York State Health Department). Reciprocity is hampered, however, in some of these states (Illinois, Maine, Massachusetts, North Carolina, Ohio, Oregon, Pennsylvania, Rhode Island, Vermont and West Virginia) because of other restrictive provisions, especially those which involve the licensure requirements of the examining physicians. These are more fully discussed in section 4.

The California, Illinois, Iowa, Massachusetts, Tennessee, Virginia and New York City health departments also approve certain federal laboratories, and several state health departments extend approval to certain out of state local laboratories. Thus Colorado, North Carolina, Oregon, South Dakota and Wisconsin will

accept a report of a test made in any laboratory approved by its own state health department. Wisconsin requires, in this connection, an affidavit signed by an official of the state health department concerned, testifying to the competence of the laboratory performing the test or tests. Rhode Island will recognize reports of tests made by state and municipal laboratories and the laboratories of large hospitals as satisfying the requirements of its premarital statute. The procedure followed in this state requires that a report of a test by an out of state laboratory be mailed to the chief of the Division of Laboratories of the Rhode Island Department of Health, Providence, who will then fill out the laboratory form used in that state and return it to the applicant. This form comprises the lower half of the certificate to be signed by the Rhode Island licensed physician who makes the physical examination of the applicant (see the following section and table 3).

4. WHO IS EMPOWERED TO EXAMINE?

Generally speaking, the laws of the various states fall into two groups as regards the matter of licensure, namely (1) those which permit any licensed physician to perform examinations and (2) those which require that the examining physician be licensed to practice in the state in which the marriage license is sought. There is much variation, however, in the exact stipulations on this point. Under the premarital laws of California, Colorado, Indiana, Iowa, Michigan, New Jersey, North Dakota and Utah, all properly licensed physicians are empowered to examine, regardless of their places of residence or of practice. In the Tennessee enactment a qualified physician is defined as one "who is a graduate of a reputable medical school and licensed to practice medicine in the state in which he resides." Wisconsin's original law, which applied only to male applicants, specified that "examiners shall be duly licensed to practice in this state or in the state in which such male person resides." The amendment to this measure, which requires a serologic test for syphilis of both applicants, makes no specifications regarding licensure. An administrative regulation establishes a similar requirement for male applicants in Louisiana, where the text of the law contains no provision on this point. New York (both state and city) requires that the examiner be "licensed in the state in which he resides or in which he maintains his office." Commissioned medical officers of the United States Army, Navy or Public Health Service are also empowered by this state to examine candidates for marriage. Virginia will accept certificates of examination signed by medical licensees of any state, territory, county or the District of Columbia. Practically speaking, the prenuptial laws of Tennessee, Wisconsin, New York and Virginia operate in much the same manner as those of Colorado, Indiana, New Jersey and North Dakota as far as licensure regulations are concerned, and comparatively few physicians would fail to qualify under any of these acts.

Under the recently enacted Ohio law any licensed physician is authorized to make premarital examinations wherever his residence may be. Practically, only physicians residing in the twenty-five states which have laws resembling those of Ohio (see table 1, footnote 4) may perform this service since residents of other states must go to Ohio for their examinations.

Alabama's law is not explicit with regard to licensure. In the administration of the measure, however, license to practice in Alabama is required.[5] Essentially the same situation exists in Connecticut, where an attorney general's ruling has interpreted the term "licensed physician" to mean licensed by its own state boards. The same is true in New Hampshire. In Maine [5a] and Vermont, where premarital laws were passed by 1941 legislatures, a similar restriction is incorporated in the texts of their respective measures. The premarital statutes of Oregon and Wyoming still further restrict the right to examine, stipulating both residence within their respective state boundaries and license to practice therein. The Kentucky statute is only slightly more liberal, empowering commissioned medical officers of the U. S. Army, Navy and Public Health Service to make examinations as well as physicians licensed and resident in Kentucky.

TABLE 4.—*Time Limitations*

State	Duration (in Days) of Validity of: Examination	Laboratory Tests	License	Legal Waiting Period
Alabama	15	*	*	*
California	30	30	No limit	3
Colorado	30	30	30	None
Connecticut	*	40	No limit	5
Illinois	15	15	30	1 [1]
Indiana	30	30	60	None
Iowa	20	*	20	None
Kentucky	15	15	30	None
Louisiana	15	*	*	None
Maine	6	30	One year	5 [1]
Massachusetts	30	30	60	5 [1]
Michigan	30	*	No limit	5
New Hampshire	*	30	Six months	5
New Jersey	*	30	30	3
New York	30	30	60	3 [2]
North Carolina	7	14	60	None
North Dakota	30	30	60	None
Ohio	30	30	*	5 [3]
Oregon	10	10	No limit	3
Pennsylvania	30	30	60	3
Rhode Island	*	40	90	None [4]
South Dakota	30	20	20	None
Tennessee	*	30	*	*
Texas	*	*	*	*
Utah	*	15	30	None
Vermont	30	*	60	5
Virginia	30	30	*	None
West Virginia	30	30	*	3
Wisconsin	15	15	*	5
Wyoming	10	*	*	*

* Information not furnished (in some cases not obtainable).
1. Filing of intention to marry.
2. Marriage may not be solemnized until twenty-four hours after issuance of license nor until three days after specimen has been taken for blood test.
3. Special time requirements, pertaining to publication of banns, applicable to church weddings in Ohio.
4. Except for prospective bride from another state who must fill and sign license not less than five days previous to marriage and leave same in hands of clerk during this period.

The new prenuptial law of Massachusetts, as first approved, resembled the laws of Maine and Vermont in the matter of licensure. It was amended before the effective date (Nov. 1, 1941) was reached, however, to permit physicians on active duty in the armed forces of the United States to make the required examinations. This modification simplifies matters for service men but fails to help civilians outside Massachusetts who wish to marry in that state.

Texas prescribes the most strict geographic limitations of all the states, specifying that the examining physician must be licensed to practice in Texas and reside in the

5. Personal communication to the authors from the administrative assistant of the state health officer.
5a. By 1942 amendment a licentiate of another state may sign statement if a graduate of a Class A medical school.—ED.

county in which the marriage license is sought.[6] While the North Carolina law is interpreted as requiring that the certificate of examination be signed by a physician practicing in that state, provision is made in the administration of the statute for accepting reports on blood specimens drawn by any properly licensed out of state physician and tested locally in any laboratory approved by its own state health department. A special form obtainable from the North Carolina Board of Health must be completed by any out of state laboratory which performs a premarital test. This must be submitted to the registrar of deeds along with the laboratory's report of the test and the certificate of medical examination by a North Carolina physician, when the applicant seeks to obtain a license. It should be noted, however, that the law of this state exempts from its provisions applicants for license who come from states not having a similar enactment. Oregon's law is apparently administered in much the same way, since any laboratory approved by its own state health board is permitted to make the required tests even though the physical examinations must be made by physicians licensed by the Oregon State Board of Medical Examiners and resident in that state. The Rhode Island statute is administered on very nearly the same basis except for the fact, which was noted in the preceding section, that approval of out of state local laboratories depends on recognition by the chief of the Division of Laboratories in the Rhode Island Department of Health. Pennsylvania's premarital examination act also operates in similar fashion, but in this case an out of state physician who draws a blood specimen must send it either to his own state laboratory or to an approved Pennsylvania laboratory. On receipt of the laboratory report he must forward it to a Pennsylvania physician whom the applicant has selected, perhaps with the assistance of friends, the American Medical Directory or the local medical society. This physician will then make the required physical examination and sign the prescribed certificate after the candidate has arrived to make application for license to marry. The premarital statute of West Virginia stipulates without any qualification that medical licensees of that state only are empowered to make the required examinations. The Illinois law carries a similar provision, but a ruling by the Director of Public Health authorizes any licensed physician in any state to secure the specimens required by law and have them examined in his own state laboratory or a federal laboratory. This is essentially the same state of affairs as described for North Carolina, Oregon, Rhode Island and Pennsylvania. An Illinois licensed physician must complete the examination and sign the certificate, but even this is not quite so restrictive as it sounds, since in this state neither annual fee nor renewal of a medical license is required. Hence many physicians practicing in other states retain Illinois licenses obtained earlier in their professional careers. It is possible, therefore, for such a physician to obtain examination certificate forms from an Illinois county clerk and complete the entire examination required by the Illinois prenuptial act, including the securing of the specimens, having them examined by the state health laboratory of the state in which he lives, making the physical examination of the applicant and signing the certificate.

Table 3 summarizes these points of difference.

6. Personal communication to the authors from the Director of Local Health Services, Texas State Health Department.

5. RESTRICTIONS UNDER WHICH INFECTED PERSONS OR POSITIVE REACTORS MAY BE GRANTED LICENSES TO MARRY

Most of the existing premarital examination statutes contain provisions for abrogation of certain requirements under some circumstances. Hardly any two states have adopted exactly similar provisions, however, in this respect. Pregnancy of the female applicant, the prospect of legitimizing a child born out of wedlock, treatment for a specified period, sterility of one or both applicants and "proof of an emergency" (which is ambiguous enough to cover almost any condition) are among the causes recognized as sufficient for setting aside the laboratory test requirement or physical examination or both. The waiting period may be shortened or waived in some states for similar reasons, especially in the case of pregnancy.

Many of the laws allow the examining physician to issue a certificate to an applicant in spite of positive laboratory tests, if in his opinion the person is in a noncommunicable stage of the disease. The problems of asymptomatic infections, of treated cases and of false positive reactions have assumed a good deal of importance in this connection. It appears doubtful, however, whether any of the current laws are so worded as to encourage many physicians to encounter the risks of later developments and sign a certificate in spite of a positive laboratory report.

The decision of an appropriate court, usually a county or circuit court, is the means most commonly authorized for securing the waiving of a premarital examination requirement. In a few states the state health commissioner or state board of health is the sole agency empowered to make such exceptions, while in other states both this means and court action are authorized.

The Virginia premarital measure has made an interesting new departure by permitting the examining physician to sign a certificate when one or both of the applicants is syphilitic, but only after (1) informing both parties of the fact, (2) discussing the possible consequences of the infection, (3) reporting them to the state health department and (4) securing the infected person's agreement to pursue treatment until dismissed. Failure to continue regular treatment then constitutes a misdemeanor, punishable by court action.

The complete lack of agreement with regard to the basis for granting exemption from premarital examination is not due to adjustment to different local conditions but results from uncertainty as to the most satisfactory basis. Round table discussions would do much to clarify the problems involved.

COMMENT

The shortcomings of the several premarital examination laws are presented here in no hypercritical spirit. It is important to realize that each such law has had a separate origin and that its final form is the net result of forces of opposition and of support which differed in each state. Moreover, in the most recently adopted measures it has been possible to profit by the experience gained with earlier ones. Each within its particular area has made a valuable contribution to the control of venereal infections.

Considered from the point of view of ultimate effectiveness, any public health measure should accomplish its objective with the least possible infringement on the normal activities of the citizenry. Few of the pre-

nuptial laws can be said to conform fully with this principle as far as interstate marriages are concerned. Colorado and Wisconsin alone will permit the applicant from another state to be examined by a local physician and have the required laboratory tests made by a local laboratory. The statutes of California, Indiana, Tennessee and Utah cause little inconvenience, however, in requiring that the tests be made in a state health laboratory.

The same is true of Iowa's measure, which makes the additional provision that residents of states in which a similar law operates may fulfil the requirements of their own state if the examining physician will have the examination certificate notarized. As pointed out in section 4, a somewhat similar provision is made under the recently adopted Ohio law, with the important difference, however, that applicants from states which have no premarital examination enactment must travel to Ohio and there meet the requirements of the latter state, which include at least a five day waiting period between application for a license and its issuance. If the wedding is to be solemnized in a church, requiring publication of the banns, an additional wait of not less than ten days is necessary, since the minister is required by law to secure evidence that the examination requirements have been completed before his first publication of the banns. (The second publication must be at least ten days later.)

The law now operating in Kentucky makes it necessary that the out of state applicant arrive far enough in advance of the wedding ceremony to allow for an examination, laboratory tests and the securing of a license. While no waiting period is required, a clerical error, a hemolyzed specimen, an unexpected positive test or some other unanticipated obstacle occurring so short a time before the hour for the wedding will inevitably cause embarrassment and occasionally may provoke tragic consequences. Furthermore, such haste is incompatible with the sound advice given by some health departments that examinations be made far enough ahead of the wedding to allow time for solving the unexpected problems which sometimes arise.

The laws of Connecticut, Maine, Massachusetts, New Hampshire, Vermont and West Virginia are only slightly less restrictive, since each of these requires that an out of state examination be performed by one of its own licensees. Massachusetts, as noted, permits men in the armed services to be examined by commissioned medical officers. The average citizen of, let us say, Peoria, Ill., does not know how to go about discovering which doctors, if any, in his home city hold licenses to practice in West Virginia, where his intended bride lives. The difficulties which he will encounter in finding some one who can tell him just what requirements he must fulfil in order to be married in West Virginia are likely to make him feel that he is being unjustifiably hampered. His experience, moreover, may easily make him hostile to such public health legislation and perhaps to other phases of venereal disease control. The practice followed by the health departments of Illinois, North Carolina, Pennsylvania and Oregon of allowing an applicant from another state to have a local physician secure the specimens for laboratory tests, provided one of their own licensed physicians makes the physical examination, helps to avert some of the difficulties just referred to. It is essentially a makeshift arrangement, however.

In the early stages of the present trend, when only a few states had adopted premarital legislation, some of it ineffective, it was logical, perhaps, that the state health departments concerned should localize the machinery of enforcement within their own boundaries. With effective laws now operating in more than half of the states, with excellent laboratory facilities in nearly all of our state health departments and in many municipal and other local laboratories, and with equally well trained medical examiners in the several states, it is difficult to see what public health value is subserved by requiring a candidate to go to another state for examination before marriage.

The problems of interstate reciprocity in the acceptance of laboratory reports are less complex than those which relate to medical licensure. It has been pointed out that laboratory reciprocity is largely in the hands of state health departments, North Dakota being the only exception. The evaluation studies in the serologic examination of syphilis conducted by the U. S. Public Health Service furnish a basis for mutual recognition of state health laboratories. Whether reciprocity should at this time be extended to include local laboratories is a less urgent question, but it deserves further consideration. A nationwide program of evaluation studies for local laboratories under the auspices of the U. S. Public Health Service, but administered through the state health laboratories, has more than once been advocated and might provide a suitable basis.

Although six years of experience with the newer type of premarital legislation are now behind us, the 1941 crop of these laws succeeded in adding to the confusing diversity of procedural stipulations. It is axiomatic that no state is under obligation to use precisely the same measures as do other states for the promotion of public health within its own borders. In our opinion, however, the establishment of reasonably uniform requirements and procedures for interstate marriages is a goal which should be reached as quickly as legal and administrative barriers can be surmounted. The steps which must be taken to accomplish this end will hardly be the same in any two states, and without a well directed effort by health organizations it is unlikely that present differences will be satisfactorily harmonized. Some of the problems here discussed have been considered by public health groups during the past year or two. No comprehensive survey has been made, however, seeking to determine what requirements an ideal premarital examination law should embrace and what provisions hinder rather than help in the control of disease. A symposium or round table sponsored by a national organization interested in venereal disease control, or in public health generally, would be timely if the fruits of its discussions should become available well in advance of 1943 legislative sessions.

SUMMARY

Details of operation of the thirty premarital examination laws now in effect in the United States illustrate the difficulties which are in many cases imposed on those who cross state lines in order to marry. These difficulties arise chiefly from the lack of reciprocity in the acceptance (1) of laboratory reports from out of state laboratories and (2) of examination certificates signed by out of state physicians.

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REPAIR OF DEFECTS IN SKULL BY READY MADE VITALLIUM PLATES

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The various methods for repair of defects in the skull have not been entirely satisfactory. This subject has been reviewed by Grant and Norcross.[1] In 1936 Charles S. Venable and his associates [2] made an experimental study of the reaction set up in the tissues by various substances placed in the body. Various metals were studied together with a number of the so-called rustless and noncorrosive steels. Every substance that was studied (with one exception) produced changes in the tissues, necrosis of bone and other electrolytic effects. One alloy, called vitallium, made of cobalt, chromium and molybdenum, did not produce any reaction in the tissues. According to the authors, their

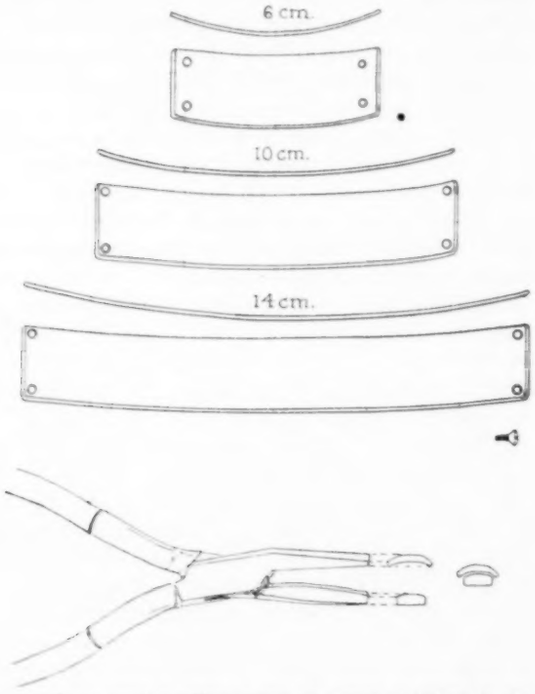


Fig. 1.—Ready made vitallium plates for repair of defects in the skull The curvature can be altered by means of the pliers.

"experiments were repeated several times to check and recheck the apparent fact that this singular alloy seemed consistently to remain inert." These observations have proved to be of great practical value. Vitallium is now being used extensively in bone surgery.[3] It was to be expected that neurosurgeons would try this alloy in the repair of defects in the skull, and in 1941 Geib [4] published an account of his experiences in 3 cases in which special vitallium plates were used for the repair of defects in the skull. A pattern of the defect was taken first and the plate was cast from this pattern. Geib found that these plates were satisfactory. They produced no reaction in the scalp or bone. They were entirely inert.

It occurred to me also that vitallium might be used for this purpose. I had the idea of using plates made

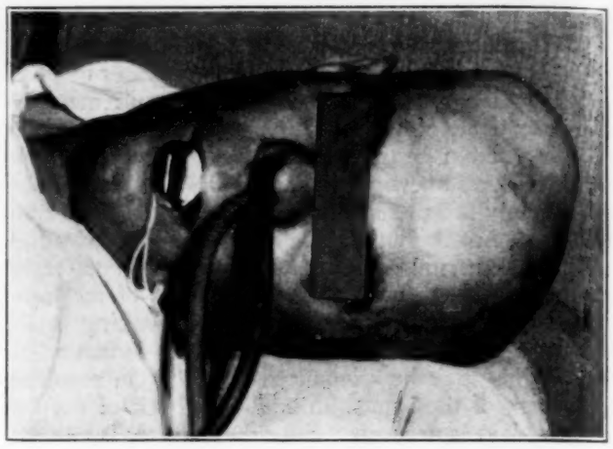


Fig. 2.—Patient with meningioma extensively invading the skull. He is shown under anesthetic just before operation.

up in various sizes and kept in stock so that the surgeon could use them when needed. Thus, when the skull was found to be invaded by meningioma so that a segment of skull had to be removed, the surgeon could take out the tumor and repair the defect in the skull at the same operation. This has been accomplished.

Almost any defect can be repaired by plates whose measurements are 6, 10 and 14 cm. in length and 2 or 3 cm. in width. Perhaps wider plates may be advantageous for certain defects. These plates have a gentle curvature which can be altered by means of pliers (fig. 1). Vitallium is not easily bent, and plates 1 mm. or less in thickness possess sufficient strength for this purpose. The plates should be bent so that they lie flat against

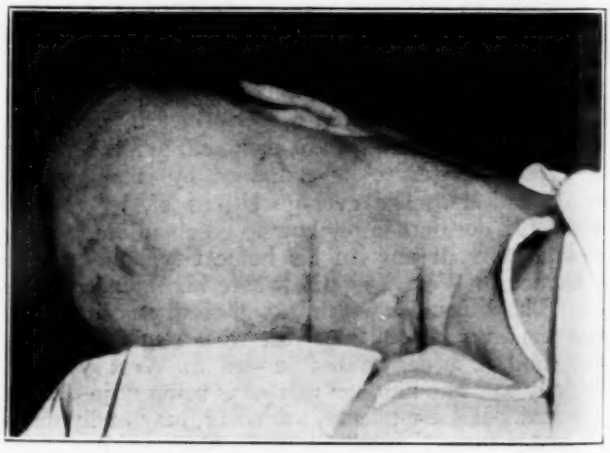


Fig. 3.—Posterior view.

the skull. They are attached by vitallium screws. The holes in the plates are countersunk. The screws are not easily placed in the bone unless a hole has been placed in the bone first. This is done by a small drill. The plates should be placed as close together as possible, so that the scalp will not sink between the plates. This happened in one of my cases and the space between

These plates can be obtained from the Austenal Laboratories, Inc., 34 West Thirty-Third Street, New York City.

From the Department of Surgery of Western Reserve University School of Medicine and University Hospitals.

Owing to lack of space, this article has been abbreviated by the omission of two illustrations. The complete article appears in the author's reprints.

1. Grant, F. C., and Norcross, N. C.: Repair of Cranial Defects by Cranioplasty, Ann. Surg. **110**: 488 (Oct.) 1939.

2. Venable, C. S.; Stuck, W. G., and Beach, Asa: The Effects on Bone of the Presence of Metals Based on Electrolysis, Ann. Surg. **105**: 917 (June) 1937; Tr. South. S. A. **49**: 294, 1937.

3. Venable, C. S., and Stuck, W. G.: Three Years' Experience with Vitallium in Bone Surgery, Ann. Surg. **114**: 309 (Aug.) 1941; The Use of Vitallium Appliances in Compound Fractures, Am. J. Surg. **51**: 757 (March) 1941.

4. Geib, W. S.: Vitallium Skull Plates, J. A. M. A. **117**: 8 (July 5) 1941.

plates was estimated to be about 1 cm. The scalp did not sink in if the space between plates was a few millimeters.

These ready made vitallium plates have been used in 4 cases. The first ones were put in place sixteen months ago. They appear to be satisfactory. They have produced no evidence of tissue reaction. They

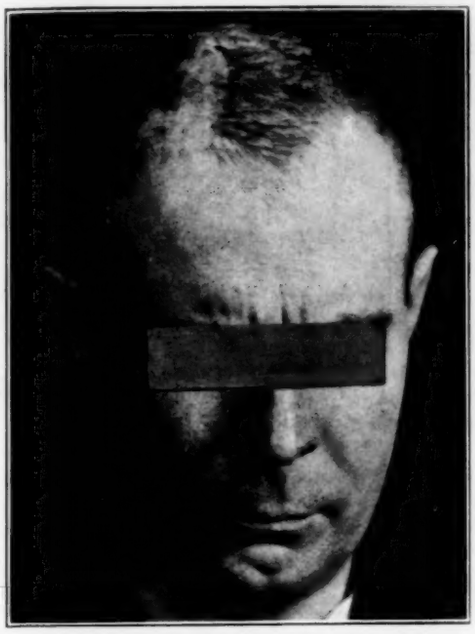


Fig. 4.—Appearance after operation, at which a large piece of the skull was removed.

remain firmly attached to the skull. The patients do not seem to be aware of the fact that they have metal plates in the skull. Figures 2 to 7 show a patient who had a very large piece of the skull removed because it

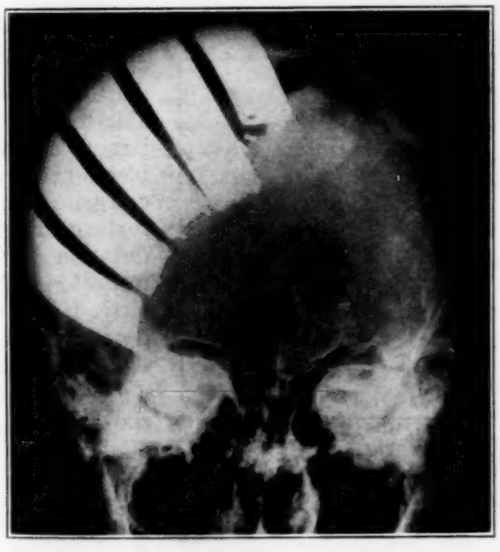


Fig. 6.—Plates covering the defect.

was invaded by meningioma. The defect was covered by plates at the primary operation.

This preliminary report on the use of stock plates is made because these plates might be useful in the care of war wounds. In the absence of infection it might be possible to repair skull defects of war wounds at the primary operation.

THE MANAGEMENT OF HEMOPHILIA

WITH LYOPHILE HUMAN PLASMA INTRAVENOUSLY INJECTED

JOHN B. JOHNSON, M.D.
WASHINGTON, D. C.

In recent years several agents have been proposed in the treatment of hemophilia. However, the most effective treatment today is still the transfusion of compatible blood.[1] There are certain inherent difficulties in this method which limit its use practically to critical emergencies for the patient with hemophilia. The typing of blood, which transfusion necessitates, automatically limits the number of possible donors among the acquaintances of the hemophilic family. The limitation becomes more acute as the number of transfusions increases, because of the development of intragroup incompatibilities, as recently discussed by Wiener and Peters.[2] The fact that whole blood cannot be preserved and stored for long periods is another limitation. The use of whole blood has saved the lives of patients with hemophilia, but it has done little to relieve the chronic disabilities due to repeated hemorrhages into the joints of these unfortunate patients.

For many years it has been known that the plasma of normal blood contains a substance effective in reducing the coagulation time of hemophilic blood to normal (Howell[1]). This substance has been shown to be associated with the globulin fraction of the plasma.[3] Hitherto no practical method has been worked out by which the effective agent in plasma can be made generally available for therapeutic use.

This communication reports the effectiveness of dried human plasma in the management of hemophilia. Evidence is presented to show that plasma desiccated in a partial vacuum at a low temperature maintains its ability to reduce the coagulation time in hemophilia in a manner similar to that of fresh citrated blood. It has been shown that storage of the processed plasma does not destroy its thromboplastic activity. Typing and cross matching have been shown to be unnecessary. Five cases have been studied which demonstrate the effectiveness of this plasma in the management of hemarthroses, hematuria and tooth extractions in patients with hemophilia. One almost totally disabled patient to whom weekly injections of plasma have been given has been rehabilitated sufficiently so that he can do steady light work.

GENERAL PROCEDURES AND METHODS

The plasma was prepared by a modification of the lyophile method of Flosdorf and Mudd,[4] which depends on the rapid dehydration of frozen plasma. Twelve to fourteen hours are required to desiccate 1,000 cc. of

Dr. Earle B. Mahoney gave advice and criticisms and permitted the use of his apparatus in the preparation of the plasma.

From the Department of Medicine, University of Rochester School of Medicine and Dentistry, and the Medical Clinics, Strong Memorial and Rochester Municipal Hospitals, Rochester, N. Y.

1. Howell, W. H.: Hemophilia, Bull. New York Acad. Med. **15**: 3-26, 1939; McGavack, T. H.: Some Recent Advances in the Treatment of Hemophilia, M. Clin. North America **24**: 791 (May) 1940.

2. Wiener, A. S., and Peters, R. H.: Hemolytic Reactions Following Transfusions of Blood of the Homologous Group, Ann. Int. Med. **13**: 2306 (June) 1940.

3. Patek, A. J., Jr., and Taylor, F. H. L.: Hemophilia: II. Some Properties of a Substance Obtained from Normal Human Plasma Effective in Accelerating the Coagulation of Hemophilic Blood, J. Clin. Investigation **16**: 113 (Jan.) 1937.

4. Flosdorf, E. W., and Mudd, Stuart: Procedure and Apparatus for Preservation in "Lyophile" Form of Serum and Other Biological Substances, J. Immunol. **29**: 389 (Nov.) 1935.

plasma in the apparatus used. The product is a whitish yellow, porous material which readily dissolves in water or physiologic solution of sodium chloride. The plasma was separated from the citrated blood by centrifugation within two to three hours after the blood was drawn. Blood drawn for determination of the coagulation time was always taken from a vein different from that used for the injection of plasma or blood. The coagulation time was measured by the method described in a previous publication.[5] The normal values obtained with this method range from six to twelve minutes. Just before injection the dried plasma was dissolved in physiologic solution of sodium chloride and given intravenously by means of a large syringe or a gravity set. In general, whenever the effects of plasma or blood on the coagulation time have been compared the same donor has been used for each group of experiments.

EXPERIMENTAL DATA

Lyophile plasma affects the coagulation time in hemophilia in a manner similar to that of fresh whole blood. In chart 1 is a comparison of the effect of fresh citrated blood and that of dried plasma on the coagulation time

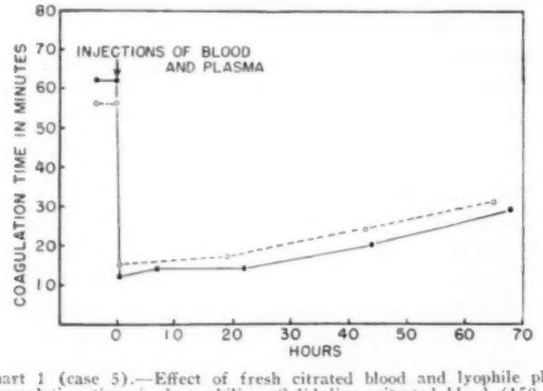


Chart 1 (case 5).—Effect of fresh citrated blood and lyophile plasma on coagulation time in hemophilia. Solid line, citrated blood (150 cc.); broken line, lyophile plasma (90 cc.).

in case 5. The similarity in the extent of the reduction and the duration of the effect is clearcut. In this case the plasma had been stored for two weeks at 5 C. after being dried. It is to be noted also that the effect was immediate. The first test of the coagulation time in these experiments was routinely made half an hour after the injection of blood or plasma. In other experiments, in which the coagulation time was measured fifteen minutes after the injection, the effect was found to be practically maximal at that period.

The thromboplastic potency of plasma is greatest when the plasma is dried within the first few hours after removal from the donor. Table 1 outlines a representative experiment and shows the loss of activity under various conditions. The potency was tested by measurement of the coagulation time after intravenous injection of the plasma. All tests were made on the same patient. The blood used in this experiment was divided into three equal parts (80 cc. each). Part A was dried immediately, and, as may be seen from table 1, it had high thromboplastic potency. Part B was dried after the blood had been kept at 5 C. for seven days. Part C was separated from the cells at the same time as part A, but the plasma was allowed to stand at 5 C. for twenty-one days, and it was then dried. The loss of potency in parts B and C is apparent from the table.

The thromboplastic activity of dried plasma appears to be stable at 5 C. Chart 2 shows the effect of aging on the activity of dried plasma. The plasma was divided into two parts (120 cc. each), and both were dried immediately. One part was tested two days later, and

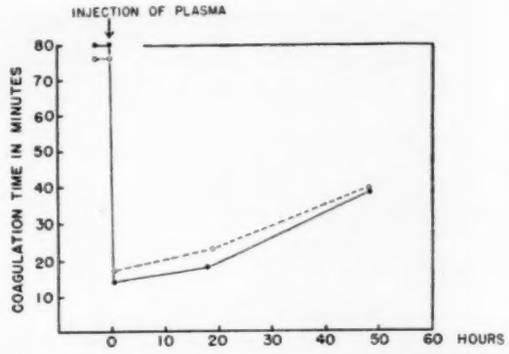


Chart 2 (case 1).—Effects of aging on thromboplastic activity of lyophile plasma. Plasma (240 cc.) divided into equal parts; both lyophilized immediately. Solid line, plasma injected after two days at 5 C.; broken line, plasma injected after ninety days at 5 C.

the other part was tested after having been kept ninety days at 5 C. The potency of the two preparations was practically the same. This fact makes it possible to utilize plasma from therapeutic phlebotomies whenever they occur and thus allows the accumulation of considerable stores of active plasma.

The period over which the injected plasma affects the coagulation of blood in patients with hemophilia varies within certain limits with the dose. Chart 2 shows the period over which the coagulation time was reduced when a 120 cc. dose of plasma was given. The curve is similar to that obtained when a 250 cc. dose of fresh citrated blood was used. Approximately 250 cc. of fresh citrated blood appears to be the optimal dose for an adult during a given twenty-four hour period. The basis for this conclusion is the fact that I have been unable to show that a larger dose of fresh blood reduces the coagulation time further or that the duration of the effect is longer. Similarly, 10 and 25 cc. doses are not as effective as larger doses. Chart 3 shows a comparison of the effect of various quantities of blood on the coagulation time in case 4. The 25, 100 and 250 cc. doses all were taken from the same donor. Because of this experience I use 125 to 150 cc. of plasma as the average dose to be given at one time.

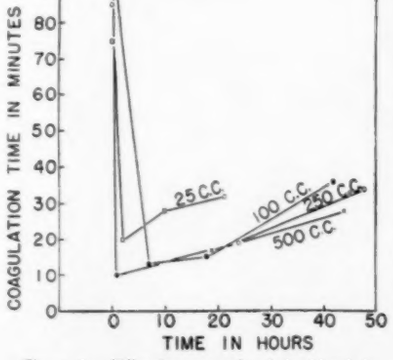


Chart 3.—Effectiveness of whole blood in varying quantities on coagulation time in hemophilia.

Typing of the plasma has been shown to be unnecessary.[6] One of my patients (with blood of type A)

5. Johnson, J. B.: Effect of Oxalic Acid Given Intravenously on the Coagulation Time in Hemophilia, Proc. Soc. Exper. Biol. & Med. **46:** 496 (March) 1941.

6. Elliot, J.: A Preliminary Report of a New Method of Blood Transfusion, South. Med. & Surg. **98:** 643 (Dec.) 1936. Strumia, M. M.; Wagner, J. A., and Monaghan, J. F.: The Intravenous Use of Serum and Plasma, Fresh and Preserved, Ann. Surg. **111:** 623 (April) 1940.

repeatedly has been given plasma in 125 cc. doses from donors with blood of types O and B and has not had a reaction. Approximately one hundred injections of untyped nonpooled plasma have been given the 5 patients, with only one reaction (to be described).

CLINICAL DATA

I have used lyophile plasma in the management of hemarthroses, hematuria and tooth extractions and as a prophylactic against recurrent hemorrhage in patients with hemophilia. In several instances of hemarthrosis the patient indicated beginning relief of symptoms referable to the joint within a few hours after the plasma was injected. Improvement continued rapidly to complete healing. Occasionally an additional injection of plasma was necessary. Hematuria also responds promptly. In patient 4 gross hematuria developed the day before admission to the hospital. On the day of admission the hematuria was massive and the coagulation time was eighty-five minutes. The patient was given 200 cc. of plasma during the first twenty-four hours. At the end of thirty-six hours the hematuria was greatly reduced. At the end of forty-eight hours the urine showed no gross blood, and twelve hours later the guaiac test was negative. In a subsequent attack of hematuria this patient was treated with plasma while ambulatory, with the result that hematuria lasted several days longer than in the first attack. In previous experience with hematuria of this severity the duration of illness was usually two to three weeks when blood transfusions were not given.

One of the most satisfying results of the type of management under discussion has been the elimination of the fear of tooth extractions in patients with hemophilia. The removal of two or more teeth on three occasions in 2 patients was managed by the use of plasma alone. A dose of 150 cc. of plasma reduced the coagulation time to normal. Immediately one to three teeth were extracted, and the sockets were packed with the dry plasma. During the next few days plasma was given daily. The attempt was made to give enough plasma to keep the coagulation time at twenty minutes or less. In my earlier experience with tooth extractions in patients with hemophilia I found that postoperative hemorrhage invariably began when the coagulation time was allowed to exceed twenty minutes. Table 2 summarizes the data on the extraction of two teeth in 1 of my patients. The effectiveness of this method of preventing hemorrhage is apparent from the fact that the red cell count and the hemoglobin content were essentially the same seven days later as they were before the extraction.

TABLE 1.—*Loss of Thromboplastic Activity of Plasma with Aging*

	Coagulation Time, Min.			
Plasma *	Control	½ Hour After Plasma	24 Hours After Plasma	48 Hours After Plasma
A	68	15	31	53
B	65	25	50	60
C	68	30	50	

* Plasma A, lyophilized immediately; plasma B, from seven day old blood; plasma C, lyophilized after twenty-one days.

An effort has been made to rehabilitate a patient totally disabled by hemophilia with weekly injections of 125 cc. of plasma for three months. This patient without therapy usually had a coagulation time of about one hundred minutes. During the previous three years his activity had been greatly restricted because of recurrent hemorrhages. During treatment his activity was greatly increased and he was able to do light work. As a rule his coagulation time was near normal during the first twenty-four hours after the injection, gradually rising to about sixty minutes at the end of six days. During the greater part of the treatment he was completely free of hemorrhages.

TABLE 2.—*Management of Tooth Extractions in a Patient with Hemophilia by Means of Lyophilized Plasma Given Intravenously*

	Coagulation Time, Min.					
Day	Before Plasma	After Plasma	Plasma Given Intravenously, Cc.	Red Blood Cells, Millions	Hemoglobin, Gm.	Comment
1	60	..	None	4.9	12.6	
		10	150	...	....	2 teeth extracted
2	18	12	150	...	....	Slight bleeding
3	19	..	125	...	....	No bleeding
4	19	..	125	...	....	No bleeding
5	..	..	None	...	....	Slight bleeding
6	25	..	125	...	....	Slight bleeding
7	22	..	125	4.8	13	Slight bleeding
8	26	..	125	...	....	Discharged

COMMENT

About one hundred injections of plasma have been given to 5 patients without typing. A reaction was encountered from the use of plasma from only one of the donors. This consisted of a chill and a rise in temperature lasting about one hour. The donor had blood of type B; the recipient, of type A. Subsequent study of the donor revealed that he had a high hemagglutinin titer (1:200). An attempt was made to remove the agglutinins by incubating some of the plasma of the donor with cells from the recipient for three hours at 5 C. This was only partially successful, in that the patient still had a slight rise in temperature and felt chilly, although he did not have a real chill, as when the first two parts of the plasma were given. My experience indicates that untyped plasma is safe for general use, even though one is likely to get transfusion reactions with plasma from exceptional donors with hemagglutinins in high titer.

The plasma protein level has been measured on three occasions in case 4. The patient had been getting intravenous injections of plasma at weekly intervals for five months, during which a tendency of the plasma proteins to increase was not noted.

In order to determine whether the process of freezing and drying would result in effective liberation of thromboplastic substance from the platelets in hemophilic blood, the plasma from 400 cc. of the blood of 1 of my patients was dried. Two days later this plasma was reinjected. No change was observed in the coagulation time, the control time being eighty minutes, and one hour after the reinjection the coagulation time was still eighty minutes. Thus it appears that the lyophile process does not increase the thromboplastic properties of hemophilic plasma.

It seems probable that in large medical centers fresh plasma can be secured in sufficient quantities and properly prepared so that the management of hemorrhages and operative procedures in persons with hemophilia can be greatly facilitated. I have not attempted to treat all my patients by injections at regular intervals because of the limited supply of plasma. It appears that the intensive treatment of incipient hemorrhages with plasma is the most practical method in the effort to rehabilitate patients with hemophilia.

CONCLUSIONS

1. The intravenous injection of a solution of human plasma which has been frozen and dried within a few hours after removal from the donor decreases the coagulation time in hemophilia, as does the administration of fresh citrated blood.

2. The thromboplastic activity of lyophile plasma is maintained for at least three months when the plasma is kept at 5 C.

3. Such plasma can be given safely, irrespective of the type of the blood of the recipient or of the donor.

4. The foregoing facts make possible the accumulation of stores of plasma suitable for the treatment of hemophilia.

5. Lyophile plasma simplifies the management of hemophilia. It has aided in the rehabilitation of seriously disabled patients when given in frequently repeated injections. It is of great benefit in meeting the many critical emergencies in the lives of such patients.

DESCRIPTION OF PATIENTS

CASE 1.—A man aged 41 had a family history of hemophilia, 1 brother having the disease. He had numerous episodes of hematuria and joint hemorrhages. He had several ankylosed joints. The blood calcium and fibrinogen levels and the prothrombin time were normal.

CASE 2.—A boy aged 12 years, 1 of 3 persons of the present generation with hemophilia, had a family history of hemophilia. He had repeated joint hemorrhages and many prolonged episodes of bleeding from minor injuries.

CASE 3.—The patient, a man aged 43, was a brother of patient 1. The history and the laboratory data were similar. Since infancy he had had episodes of hemorrhage.

CASE 4.—A youth aged 20 with a family history of hemophilia had repeated joint hemorrhages, the first episode having occurred at the age of 9 months. There had been excessive bleeding from minor injuries since infancy. The blood calcium and fibrinogen levels were normal.

CASE 5.—A man aged 26 with a family history of hemophilia had his first hemorrhages at the age of 3 weeks. Later he had a severe hemorrhage after circumcision. There were repeated episodes of hemorrhage into the gastrointestinal tract, joints and muscles. He had several episodes of hematuria, epistaxis and laryngeal hemorrhage. The blood calcium and fibrinogen levels and the prothrombin time were normal.

Howard University College of Medicine.

Chromosome Chemistry.—The cell nucleus consists of chromosomes, which are enormously extensible protein fibers shown by digestion to resemble the protamines and histones making up the bulk of sperm heads. To these fibers or, rather, to specific points on them, the chromomeres, are attached desoxyribose-, or thymo-, nucleic acid, which is responsible for the specific aldehyde reaction given by the chromosomes in Feulgen's test. Underlying the cycle of mitosis and cell division is a cycle of attachment and detachment of this nucleic acid to and from the chromosomes. This goes with the cycle of coiling and uncoiling of their protein framework. The maximum attachment corresponds with the maximum spiralization of the chromosomes at metaphase of mitosis. At the other extreme, within the resting nucleus, they are uncoiled and relatively free from nucleic acid. At the end of every mitosis the chromosomes give up their nucleic acid charge and at the same time secrete nucleoli which dissolve at the beginning of the next mitosis when the chromosomes are taking up nucleic acid again. These nucleoli contain no thymo-nucleic acid, but instead the ribose form which is characteristic of cytoplasm and of viruses.—Darlington, C. D.: Chromosome Chemistry and Gene Action, *Nature*, Jan. 17, 1942, p. 66.

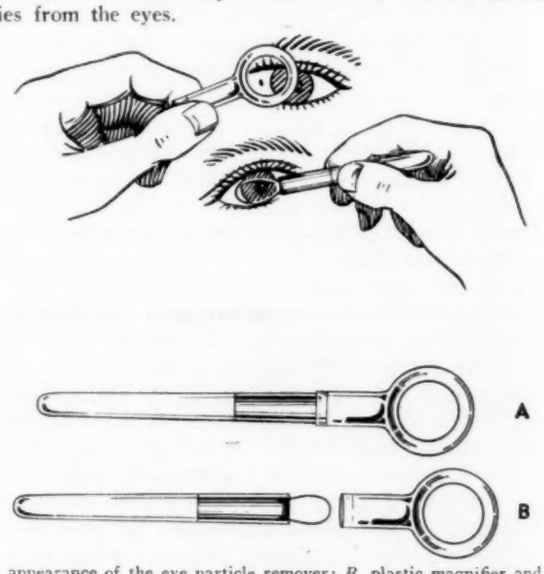
Clinical Notes, Suggestions and New Instruments

A PRELIMINARY REPORT ON A NEW EYE PARTICLE REMOVER

JOSEPH B. BIEDERMAN, M.D., CINCINNATI

All physicians have had many occasions to remove foreign bodies from the eye. At times it is difficult to find the particle, and a magnifying glass then becomes of great help in locating the foreign body. If the mass happens to consist of a metal which is capable of being magnetized, a magnet is used to loosen the particle before it is removed. A cotton swab is most frequently used to perform the mechanical removing. Sometimes a small portion of the cotton remains in the eye when the particle is removed. Cotton and handkerchiefs, when placed under the low power magnification of the microscope, are seen to have many rough projections that are capable of irritating the inflamed conjunctiva.

My object in this report is to describe a new device which has been found extremely useful for the removal of foreign bodies from the eyes.



A, appearance of the eye particle remover; *B*, plastic magnifier and magnetized loop pulled apart. A particle in the eye is located and magnified and removed by the magnetized loop.

The illustration shows this eye particle remover, closed and open. The particle is located and magnified by the plastic magnifier and then removed by the smoothened, magnetized loop.

This device consists of a plastic magnifier and a special, finely rounded magnetized wire loop, which in turn is attached to a magnetized metal plug. The magnifying portion is composed of a plastic material so that it will not break when dropped. The smoothened wire loop is magnetized so as to attract small metal particles embedded in the eye. Large, deeply embedded, magnetizable metal particles will require the use of a larger magnet, but the smaller, superficially located particles can be removed with this instrument.

These small, superficially placed foreign bodies are attracted by the magnet and at the same time are mechanically removed by the special smoothened wire loop. Nonmetallic particles are mechanically removed by the smooth wire loop.

SUMMARY

The new plastic eye particle remover described is composed of a plastic magnifier and a magnetized, smoothened wire loop. The particle is located by the nonbreakable plastic magnifier and then removed by the smoothened wire loop. Small, superficially located, magnetizable metal particles are loosened by the magnetized wire at the same time that the particle is being mechanically removed by this looped wire.

2010 Union Central Building.

A REMARKABLE CASE OF SPINAL METASTASIS IN A CEREBELLAR MEDULLOBLASTOMA

L. HALPERN, M.D., JERUSALEM, PALESTINE

The following observation seems to be of interest to neurologists as well as to surgeons:

H. D., a boy aged 7 years, started complaining of headaches and vomiting one and a half years before the present admission. In the course of the following few weeks equilibrium disorders appeared. The neurologic examination revealed in the erect position and while walking moderate ataxia with no evident lateralization and bilateral nystagmus. The ophthalmoscope revealed bilateral edematous papillae of 2 diopters which rapidly reached 3 diopters. On the basis of these findings a cerebellar tumor, probably situated in the vermis, was diagnosed and operation recommended. On operation (Professor Vincent of Paris) a medullary blastoma was found in the midline of the cerebellum. The greatest part of the tumor was removed. After this the boy received several roentgen treatments.

Following the operation the general symptoms of cerebral compression disappeared completely and the ataxia has greatly improved. During this period the boy's condition was satisfactory. Three months before the present admission, i. e. fifteen months after operation, the boy began complaining of severe pain in the small of the back with irradiations of the pain in the legs becoming more acute on walking. At the same time he began urinating less frequently, although the total quantity of urine did not decrease. On examination a strongly positive bilateral Lasègue sign was present and absence of the right Achilles reflex was found.

Fig. 1.—Roentgen appearance of spine showing dense shadows of silver clips.

The spontaneous pains in the back and legs, the impairment of bladder function and the disappearance of the Achilles reflex led to the suspicion of a pathologic process in the cauda equina. An unexpected finding on roentgen examination explained the syndrome. At the level between the fifth lumbar vertebra and the sacrum, two double edged dense shadows 0.5 cm. long were seen (fig. 1). The supposition that the shadows were produced by Cushing's silver clips used in the operation was confirmed by the roentgenogram of the skull, which showed a number of similar shadows (fig. 2).

It was apparent that these were Cushing's silver clips which had been detached from the site of the operation on the cerebellum and had fallen into the vertebral canal, fixing themselves on the nerves of the cauda equina. The roentgenogram of the spine in different positions showed the clips to be fixed at the aforementioned point. There was thus reason to believe that the symptoms of a caudal lesion were caused by these clips.

Fig. 2.—Roentgen appearance of skull showing dense shadows similar to those in the spine.

In the meantime, the child's condition greatly deteriorated. The pains in the back and in the legs increased in intensity. In the right leg, weakness of the peroneus muscle was noticed. The Achilles reflex disappeared also in the left leg. Because of this development an operative intervention was considered. At the beginning, an operation with the object of removing the clips was thought inadvisable for the following reasons: Persistent vomiting set in at about the same time as the spinal manifestations. The vomiting was considered a symptom of cerebral pressure following renewed neoplastic growth in the cerebellum. It was reasonable to assume that the detachment of the clips from the site of operation was not accidental but a result of increased cerebral pressure. My associates and I were reluctant to recommend a second operation on the spine in this case, which as far as life was concerned was hopeless. Pressed by circumstances we had to operate on the child.

The surgical intervention (Dr. Marcus, of Tel Aviv) revealed an unexpected finding. Laminectomy performed at the level of the fourth and fifth lumbar vertebrae showed the dural sac totally filled with neoplastic tissue. This on histologic examination was found to be a medulloblastoma. Biopsy thus proved that the cauda syndrome was a consequence of spinal metastasis.

Spinal metastasis of a medulloblastoma of the cerebellum is not rare. Among 61 cases of medulloblastoma of the cerebellum reported by Cushing,[1] spinal metastasis of this tumor was found in 6 cases. In respect of the pathogenesis of this metastatic growth Cushing considered implantation of migrating tumor cells in the spinal meninges. He warned against any kind of manipulation that could favor this process, such as lumbar puncture. Our case is remarkable in that the silver clips appear to have acted as the intermediate factor. It may be assumed that tumor cells were detached, together with the clips, and were responsible for the new formation in the spinal space. It may thus be concluded that Cushing's warning as to the factors that may favor spinal metastasis of a medulloblastoma of the cerebellum applies also to the silver clips he introduced in surgery of the brain.

From the Neurological Department and Outpatient Clinic of the Rothschild Hadassah University Hospital.

1. Cushing, Harvey: Experiences with Cerebellar Medulloblastomas, Acta path. et microbiol. Scandinav. **7**: 1, 1930.

Special Article

CUTANEOUS DETERGENTS

C. GUY LANE, M.D.
AND
IRVIN H. BLANK, PH.D.
BOSTON

NOTE.—*This article is published under the auspices of the Committee on Cosmetics.*—ED.

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      (*a*) Cellular Débris.
      (*b*) Coagulated Proteins.
  B. Exogenous:
    1. Water-Soluble Substances.
    2. Oil-Soluble Substances.
    3. Insoluble Substances, Including Micro-Organisms and Parasites.
IV. Types of Detergents: Their Chemical and Physical Characteristics and Their Mode of Action:
  A. Brush, Abrasives, Powder and Other Mechanical Agents.
  B. Air.
  C. Water.
  D. Oils.
  E. Oil Solvents.
  F. Soaps.
    1. Manufacture.
    2. Chemical Composition.
    3. Physicochemical Characteristics.
    4. Mode of Action.
    5. "Sterilizing" Action.
  G. New Detergents.
V. Action of Detergents on the Skin:
  A. Action of Water on the Skin.
  B. Action of Oil and Oil Solvents on the Skin.
  C. Action of Soap on the Skin:
    1. Removal of Natural Oils.
    2. Alkali and Fatty Acid Irritations.
    3. Patch Tests.
    4. Pathogenesis of a Dermatitis Due to the Use of Soap.
  D. Action of the New Detergents on the Skin.
VI. Comments.

I. INTRODUCTION

The use of some cleansing agent with water is necessary to maintain satisfactory skin hygiene. While a survey of the literature reveals some articles on skin cleansing, especially with regard to soap, little has been done to determine the most satisfactory method of cleansing the skin or to learn what effect cleansing processes have on the skin itself. An attempt to cite all available references would lead to useless duplication. Wherever possible, papers are cited in this presentation which include complete bibliographies and which have been published in readily available American or English periodicals. A symposium[1] on the subject of cleansing the normal and abnormal skin was held in 1934 in Germany, but in general even the dermatologic textbooks devote an insignificant amount of space to the subject. Physicians in general give the matter little thought. One is apt to assume that a patient keeps up satisfactory skin hygiene, and the usual advice on cleansing is very general and does not take into consideration the wide variation in individual skins and the difference in cleansing agents.

Although soap has been known and used as a detergent for centuries, its almost universal use dates only from the time when it became possible to produce alkali cheaply, perhaps early in the nineteenth century. But some skins do not tolerate soap well. The dermatologist often finds it advisable to substitute some other method for cleansing abnormal skins. The type of "dirt" to be removed in many industries requires other cleansing methods. The cosmetic manufacturers and their followers advise additional and often superfluous methods.

Within the last few years a number of new detergents have been developed and some have been used alone or with other materials for cleansing the skin. These detergents were developed primarily to be used in connection with the manufacture of and laundering of textiles. Hence, much of the literature on the subject of detergence is concerned with textiles and will be referred to in this paper when it is felt that it may apply to the skin as well as to textiles and particularly when some phase of the subject is discussed for which the only literature available deals with textiles. The term "soil," used throughout the paper, is borrowed from the textile chemists to indicate any and all substances removed from the skin during the process of cleansing. After surveying the literature on cleansing the skin, it seems advisable to discuss, first, the physical structure of the cutaneous surface and some of the pertinent physiology of the skin; second, the physical and chemical nature of the "soil" to be removed; third, the physical and chemical characteristics of the various detergents and their methods of cleansing, and, fourth, the action of these detergents on the skin itself.

II. PHYSICAL STRUCTURE AND CHARACTERISTICS OF THE CUTANEOUS SURFACE

Over the entire area of the body, the limiting surface of the skin is a continuous, relatively smooth layer of dead, flattened, keratinized cells, the last stage of the normal epidermal cell. Macroscopically this surface is made somewhat irregular by "ridges and furrows" of various size, shape and depth, by the orifices of the sweat glands and hair follicles and by outgrowths of hair. Microscopically it is made irregular by the intercellular spaces and by the continuous desquamation of the cells of the stratum corneum. The absolute limiting boundary between man and his environment, however, is not this outer layer of cells of the stratum corneum but the products secreted by the cutaneous glands in the form of a film over these cells. This is true of the normal skin at all times except, perhaps, for a few minutes following a thorough cleansing which removes these secretions. The moisture of the sweat evaporates relatively rapidly, leaving behind the salt, urea and other substances which were dissolved in it. Of greater importance, however, is the sebum which is continually being produced and usually covers all areas of the skin, except the palms and soles. In a

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1. Symposium: Reinigung der gesunden und kranken Haut, Dermat. Wchnschr. **99**: 956-968, 1934.

paper by Perutz and Lustig [2] experiments were reported which showed by conductivity measurements, staining reactions, microscopic examinations and heating experiments that the fat on the surface of the skin existed as a more or less uniform layer with cellular inclusions but no crystals or water. Two fat phases sometimes existed, but no emulsion was ever present.

These secretions of the skin play an important part in systemic temperature control. This control is partially accomplished by evaporation of the water of the sweat as well as by capillary changes. Under normal conditions the surface of the skin is continuously changing in response to both internal and external stimuli. Fresh secretions from the glands are always reaching the surface, especially after the removal of accumulated products by some cleansing process. Some of the secretions are being removed by evaporation. At the same time the secretion of sweat and sebum automatically cleanses, to a certain degree, the orifices of the sweat glands and hair follicles.

The surface cells of the skin are composed primarily of proteins, lipids and water. The protein is mainly keratin, which is insoluble in weak acids, weak alkalis and salt solutions. According to Wilkerson [3] the isoelectric point of the protein is at p_H 3.70. This means that, if the outer layers of cells of the epidermis are brought into equilibrium with a solution having a p_H to either side of 3.70, swelling of the cells will occur. Pillsbury and Shaffer [4] showed that the skin reacted more strongly to alkalis than to acids. In general, weak alkali solutions cause more decomposition of keratin than do much stronger acid solutions. Since wool and silk are composed of proteins similar to the skin proteins, the chemical and physicochemical reactions of the textiles, made from wool or silk, with acids and alkalis may be expected to simulate skin reactions. Even though composed of similar types of proteins, the surface layer of the skin obviously differs from wool or silk in that the skin is always changing as regards both its cells and its glandular secretions.

Using colorimetric methods and various electrometric methods, such as hydrogen, quinhydrone and glass electrodes, many investigators, including Sharlit and Scheer,[5] Schade and Marchionini,[6] Marchionini,[7] Lustig and Perutz,[8] Levin and Silvers [9] and Blank,[10] have definitely proved that the surface of the normal skin has an acid reaction. The p_H has been reported to range from 3.5 to 7.0. This acid reaction and acid isoelectric point for keratin may be of some importance in determining the most desirable p_H for detergents.

It should not be forgotten that there is a great deal of normal variation in the normal skins of different people, as well as differences in various body areas. Most people will classify their skins as either "oily" or "dry." This is probably a measure of the quantity and quality of the sebaceous secretion. The same environmental conditions will not produce the same amount of sweating on each of two individuals. Different environmental conditions will cause variations in the amount of evaporation which will take place. The amount, type and distribution of hair varies. There are obvious differences in texture, thickness and pigmentation of the skin. The variations from the allergic standpoint are multitudinous.

Lesions on the skin appreciably alter surface characteristics. The upper layer or layers of the skin may be entirely removed by some types of lesions or made thicker by other types. Fissures and excoriations will be deeper than the "furrows" occurring on normal skin, and the limiting boundaries of the fissures are not normal epithelium as are the boundaries of the "furrows" on normal skin. The characteristics of the normal secretions (sweat and sebum) may be changed. The secretions may be supplemented by blood or by a serous or purulent exudate. This exudate, after evaporation occurs, forms a crust, a type of surface never occurring on normal skin.

Comparison has been made between textiles and skin, but even the hairy areas of the skin are much less irregular than the complex surface of a textile, composed of spun and woven fibers. The total surface of all the individual fibers which go to make up a textile constitute its "active" surface and it is readily seen that this "active" surface is many times greater than the actual area of a piece of cloth. The "active" surface of a part of the skin, particularly of hairy skin, is likewise greater than the actual area, but the difference between the area and the "active" surface in the case of the skin is not nearly as great as in the case of textiles. Also the interstices from which soil must be removed, i. e. the orifices of sweat glands and hair follicles, are much less complex for the skin than for a piece of cloth. Hence, at least from the mechanical point of view, the removal of soil from the skin should be much simpler than the removal of soil from a textile.

III. TYPES OF SOIL

The term soil, as used here, includes those substances which reach the skin surface either from within the body (endogenous) or from the environment (exogenous). These substances may be classified as follows:

A. Endogenous soil:

1. Water.
2. Water-soluble substances (inorganic, organic).
3. Oil-soluble substances.
4. Insoluble substances:
   (*a*) Cellular débris.
   (*b*) Coagulated proteins.

B. Exogenous soil:

1. Water-soluble substances.
2. Oil-soluble substances.
3. Insoluble substances, including micro-organisms and parasites.

The sources of soil from within the body, for the normal skin, are sweat, sebum and desquamating epidermis. In pathologic conditions, to these sources must be added blood and lymph.

A. *Endogenous Soil.*—Water is common to sweat, blood and lymph, and these three fluids are the source

2. Perutz, A., and Lustig, B.: Ueber den physikalisch-chemischen Zustand des Fettes der Hautoberfläche, Dermat. Wchnschr. **97**: 1016-1017, 1933.

3. Wilkerson, V. A.: The Chemistry of the Human Epidermis: II. Isoelectric Points of the Stratum Corneum, Hair and Nails as Determined by Electrophoresis, J. Biol. Chem. **112**: 329-335, 1935.

4. Pillsbury, O. M., and Shaffer, Bertram: Cutaneous Reaction with Reference to the Surface p_H, the Reaction to Ointments and Solutions of Different p_H and the Effect of the Skin in Modifying the p_H of Applied Solutions, Arch. Dermat. & Syph. **39**: 253-267 (Feb.) 1939.

5. Sharlit, Herman, and Scheer, Max: Hydrogen Ion Concentration of the Surface of Healthy Intact Skin, Arch. Dermat. & Syph. **7**: 592-598 (May) 1923.

6. Schade, H., and Marchionini, A.: Zur physikalischen Chemie der Hautoberfläche, Arch. f. Dermat. u. Syph. **154**: 690-716, 1928.

7. Marchionini, A.: Untersuchungen über die Wasserstoffionenkonzentration der Haut, Arch. f. Dermat. u. Syph. **158**: 290-293, 1929.

8. Lustig, B., and Perutz, A.: Ueber ein einfaches Verfahren zur Bestimmung der Wasserstoffinonenkonzentration der normalen menschlichen Hautoberfläche, Arch. f. Dermat. u. Syph. **162**: 129-134, 1930.

9. Levin, O. L., and Silvers, S. H.: The Reaction of the Skin and Its Secretions in Eczema, Arch. Dermat. & Syph. **25**: 825-834 (May) 1932.

10. Blank, I. H.: Measurement of p_H of the Skin Surface: II. p_H of the Exposed Surfaces of Adults with No Apparent Skin Lesions, J. Invest. Dermat. **2**: 75-79, 1939; III. Measurements on the Arms of Children with No Apparent Skin Lesions, ibid. **2**: 231-234, 1939; IV. Daily Variations for Adult Females with No Apparent Skin Lesions, ibid. **2**: 235-242, 1939.

of the water-soluble substances deposited on the skin surface. The composition of sweat is not constant. Way and Memmesheimer [11] have compiled a complete review of the literature on sweat. The total solids in sweat seldom exceed 0.5 per cent; these solids are composed primarily of chlorides, sulfates and lactates of sodium and potassium, and urea. There may be traces of fat, albumin and phosphates. The volatile constituents are primarily water and traces of lactic acid and low molecular weight fatty acids. Even with excessive sweating, seldom more than 2,000 cc. of sweat is excreted in twenty-four hours and, if all the solids remain on the surface of the body after evaporation of the water, only about 10 Gm. of very soluble soil would be left and that would be distributed over the entire surface of the body.

Lymph and blood plasma contain more solids than does sweat. Blood plasma contains 8 to 10 per cent of total solids, of which about 1 per cent is inorganic. The inorganic substances are chlorides, sulfates, phosphates and carbonates of sodium, potassium, calcium and magnesium. The organic materials are primarily proteins with smaller amounts of carbohydrates and fats. The proteins compose the bulk of the crusts which form following evaporation of the water from serous exudates in some lesions. Although these proteins in the fresh exudate are either dissolved or in colloidal solution, after they have been formed into a crust they are not easily dispersable in water, and hence, in the outline, they have been listed separately from the water-soluble substances and called coagulated proteins.

The oil-soluble substances on the surface of the skin come from two main sources, the sebum and the epidermal cells, and a very small part from the sweat. It is difficult to separate the fatty material from these three sources, but this is of no importance for the present consideration. Emanuel [12] states that almost all of the oil-soluble substances come from the sebaceous glands and little or none from the epidermal cells or sweat. He also states that following removal of these substances with oil solvents they are not replaced to their original level even after two hours. Excretion does, however, appear to stop after a maximum level has been reached. Kooyman [13] has ably reviewed and added original information to the subject of the chemical composition of the lipids of the skin surface. From 25 to 30 per cent of the lipid is unsaponifiable, less than one half of which is cholesterol. Over half of the sterol is present as sterol esters. Neutral fats and fatty acids compose the saponifiable part. About half of the fatty acid fraction is free fatty acid.

Some of the excretions of the skin are either malodorous at the time of excretion or become so some time after they have been excreted and have spontaneously decomposed or been subjected to decomposition by the bacterial flora of the skin. The odors of these excretions vary a great deal from person to person. The very fact that they can be detected by the sense of smell indicates that they must be volatile and hence might eventually be automatically removed from the surface of the skin. As a rule, however, various cleansing methods are necessary to hasten the removal of these odorous substances.

11. Way, S. C., and Memmesheimer, Alois: The Sudoriparous Glands: III. Sweat, Arch. Dermat. & Syph. **41**: 1086-1107 (June) 1940.
12. Emanuel, S. V.: Quantitative Determinations of the Sebaceous Glands' Function, with Particular Mention of the Method Employed, Acta dermat.-venereol. **17**: 444-456, 1936; Mechanism of Sebum Secretion, ibid. **19**: 1-16, 1938.
13. Kooyman, D. J.: Lipids of the Skin: A Review, Arch. Dermat. & Syph. **25**: 245-255 (Feb.) 1932.

It should be stated here that sweat and sebum must not be thought of only as soil and materials to be removed. Both undoubtedly have some part to play in keeping the skin supple; they may aid in the protection against the invasion of micro-organisms, and the sebum may act as a water-repelling film as well as a precursor of certain vitamins. Therefore, although we may wish to remove some of the products of excretion of the skin glands, proper methods for cleansing the skin probably should not remove all of the sweat and sebum all of the time.

It must also be stated that processes of excretion do aid in keeping the skin clean. Way and Memmesheimer,[11] in referring to sweat, say "its cleansing effect is also remarkable and many a laborer, who never takes a bath or rarely washes more than the extremities of his body, is kept clean and healthy owing to the fact that he works hard enough at times to sweat profusely."

As the epidermal cells are pushed toward the surface and removed from all body fluids, the process of keratinization takes place; some autolytic processes may occur; the cells dry up and desquamate. This is the source of cellular débris on normal skin. In addition to this process, which in some pathologic conditions may become accelerated, the blood stream may be at times the source of some cells and cellular débris on the surface of the skin.

In some of the hairy areas the process of keratinization is relatively pronounced even on perfectly normal skins. The keratinized cells, together with the products of secretion of the numerous sebaceous glands, constitute "dandruff." Pathologic conditions may accelerate either of these normal processes or alter the characteristics of the sebaceous secretions.

B. *Exogenous Soil.*—The different types of soil, both inorganic and organic, which may reach man's skin from his environment are so numerous that it would be nearly impossible and of little advantage to list them individually. They come into contact with man's skin from the air, from his clothes and from all things which he touches. Many different types of soil are deposited on man's skin as a direct result of his occupation.

For a consideration of the removal of exogenous soil it is sufficient, however, to determine only whether the soil is water soluble, oil soluble or insoluble, since ease of removal and the method of removal to be used will depend to a large extent on the solubility and emulsifiability of the soil in the substance or substances used for cleansing the skin.

Various substances intentionally placed on the skin must be classified as soil for the purpose of this discussion, since after they have served their purpose they are removed by various cleansing methods. Included in this group are such materials as ointments for the treatment of skin diseases, cosmetics such as rouge, and theatrical make-up.

Objection may be raised to the inclusion of microorganisms and parasites in this classification. It is felt, however, that since these are things which get onto the skin from the environment and since cleansing methods do remove some or all of them, it is correct that they be classified as soil. Among these are such organisms as the dermatophytes and the acarus, which actually get into the skin. No ordinary method of cleansing the skin will remove them.

Certain types of soil, such as silver nitrate, dyes and chrome or vegetable tannins, may undergo chemical reactions with the cutaneous constituents or be adsorbed

by the skin. Under these conditions no method of detergence other than mechanical or direct chemical action will remove them.

It has been pointed out that the endogenous soil leaves a more or less continuous film on the surface of the skin all of the time. Most of the exogenous soil, therefore, will be deposited not on the true skin but rather on this oily film. It will be shown later, in the discussion of the mechanism of the removal of the soil, that the separation of the exogenous soil from the skin by this oily film probably simplifies the removal of the exogenous soil, since much of it will be removed when the oily film is removed.

The entire problem of cleansing the skin, however, is not simple. It is concerned with the removal of many substances, inorganic or organic, water soluble, oil soluble or insoluble, originating from within the body or from the environment. The surface from which these materials are to be removed, though not as irregular as the surface of most textiles, is nevertheless much more irregular than is at first apparent. The processes of cleansing are necessarily limited to those which will not irritate or injure the skin.

IV. TYPES OF DETERGENTS: THEIR CHEMICAL AND PHYSICAL CHARACTERISTICS AND THEIR MODE OF ACTION

The nature of the surface to be cleansed and the types of soil to be removed have been discussed. The various types of detergents and the mechanisms whereby they remove the various types of soil will now be discussed under the following classification:

A. Brush, abrasives, powder and other mechanical agents.
B. Air.
C. Water.
D. Oils.
E. Oil solvents.
F. Soaps.
G. New detergents.

In the final section of this review, the action of these detergents on the skin itself will be discussed.

A. *Brush, Abrasives, Powder and Other Mechanical Agents.*—Soil can be removed from the cutaneous surface by mechanical means plus water. Such a cleansing method is seldom used alone, but, since mechanical action is a part of the mechanism whereby soil is removed by any other cleansing method, it is briefly mentioned first. Soil may be rubbed off by the scrub brush, the wash cloth, the towel, one's clothing and a razor. It may be flushed off by a strong stream of water. Abrasives such as sand and sawdust are common ingredients of many industrial cleansers. Inert powders may remove soil by virtue of sorption onto their surface. Mechanical removal of soil is probably a more important part of cleansing than is at first realized.

B. *Air.*—Air is seldom considered a detergent and probably, in the true sense of the word, should not be called a detergent; but the circulating air does remove by evaporation certain of the volatile materials previously classified as soil, namely water and some of the volatile acids such as formic and acetic.

It seems to us that too little attention has been given to the evaporation of water from the surface of the skin. Certainly the amount of water remaining on the surface of the skin influences the rate of reproduction of the micro-organisms which are on the skin. Also it is possible that the surface moisture plays some role in certain types of dermatoses. The temperature of the skin and relative humidity of the air are the main factors which determine the rate of evaporation of the water from the surface of the skin. The rates of evaporation of various volatile soils increase as the temperature increases and their vapor pressures decrease.

C. *Water.*—Water has just been discussed as a type of soil which is removed from the skin. It is also, however, the one material which is common to most of the frequently used methods of detergence. At times it is used alone, but, more generally, various detergent substances are used in conjunction with water to aid in the removal of oil-soluble and insoluble soil.

When water is used alone it serves as a satisfactory detergent for removing the various water-soluble soils. Most of the water-soluble residues from the evaporation of sweat are easily removed by water. The water-soluble proteins, which have undergone change during coagulation, are not easily removed by water.

Water alone can act as a detergent only by dissolving the soil or by mechanically flushing it from the surface. It can dissolve only that part of the soil with which it comes in direct contact. Even some water-soluble soils are not easily "wet" by water (for example, boric acid powder) and it is the function of some of the detergents, which will be discussed later, to aid in establishing contact between the water and the soil. Once contact is etablished, the temperature of the water is probably the most important variable which influences solution; the solubility of most types of soil increases as the temperature is increased.

Many waters used for washing contain varying amounts of chlorides, sulfates and bicarbonates of calcium and magnesium (hard water) and these salts will be deposited on the skin if the water is left there and allowed to evaporate. Also a precipitation of insoluble materials may take place if a type of soil is present which will react with the salts in the hard water to form a precipitate.

D. *Oils.*—Liquid petrolatum or olive oil is sometimes recommended as a detergent. These materials will, of course, remove the oil-soluble soil by solution but not the water-soluble soil except as they may remove it mechanically. Oils are used most frequently as detergents by persons with "dry skins," by workers in certain industries in which the soil is oil soluble and by persons with some pathologic cutaneous condition for which soap and water are contraindicated. Also oils are satisfactory detergents for the removal of crusts from lesions.

As a substitute for cleansing methods which use water, the cosmetic manufacturers have popularized methods which use oils or oil and water emulsions, recommending them particularly for persons with "dry skins." Cleansing creams are mostly hydrocarbons alone (mineral oils and petrolatums). Cold creams are emulsions of fats, hydrocarbons and water, which may contain also spermaceti, beeswax, hydrous wool fat and almond oil. Vanishing creams are primarily stearic acid, stearic acid soaps and water. These materials remove oil-soluble soils by means of true solution of the soils. The creams which have water present may dissolve some of the water-soluble soil at the same time. When the cream used is an emulsion, it may be stated as a general principle that the cream will dissolve most easily that type of soil which is soluble in the external phase of the emulsion, if the emulsion does not break on application to the skin. That is to say, a water-in-oil emulsion, in which oil is the external phase, will dissolve oil-soluble substances more easily than water-soluble substances.

E. *Oil Solvents.*—The use of oil solvents for removing oil-soluble soil must be mentioned even though it is an infrequent detergent method. The alcohol rubs given the bedridden patient may dissolve some fatty materials from the surface of the skin. The alcohol in tincture of green soap may also act as a solvent. Industrial workers who get much oil and grease on their hands frequently use gasoline and other grease solvents for removing such soil. Painters often use turpentine for cleansing their skin. Klauder, Gross and Brown [14] mention the many substances used by workmen for cleansing their hands.

Certainly more of the endogenous soil is oil soluble than is water soluble; i. e., the secretions of the sebaceous glands constitute a greater bulk than the solids in the sweat. Probably in the great majority of cases also a large part of the exogenous soil is either oil soluble or insoluble. If we were dependent, therefore, on solution alone for cleansing, any oil would be a more satisfactory detergent than water. Fortunately, however, since cleansing with oil leaves an unpleasant residual oily feel, we are not dependent on solubility alone for removing soil but can make use of emulsification and other principles for removing oil-soluble soils if we add detergents to the water. Soaps and the new detergents act in such a manner.

F. *Soaps.*—In his review of the soap industry, Ittner [15] says "Few things have more primary importance to the individual than soap. Food, clothing and fuel for warmth in cold weather are absolute necessities to all of us, but so also is soap for cleansing the body and clothes and the maintenance of sanitary conditions of health. Soap has been in use so long in our homes . . . that it is taken as a matter of course."

Soap and water are used for cleansing the skin much more frequently than any other method. Yet few who use soap know much about its chemical or physical properties. Until recently, discussions of soap by the medical profession have been only in the most general terms, as for instance the statements of Foley [16] that the characteristics of a good soap are that "(1) it should be made of the purest materials; (2) it should act as an emollient to the skin; (3) it should be free of excess alkali; (4) it should act as a detergent, cleaning and purifying the cutaneous surface, and (5) it should never irritate the cutaneous surface."

1. Manufacture. A mixture of fats, which under modern operating conditions may weigh up to 75 tons per single batch, is heated to about 100 C. To this mixture a water solution of an alkali (usually sodium hydroxide) is added very slowly with continuous agitation until a slight excess of alkali has been added. Heating is continued for many hours and then a solution of sodium chloride is added until the soap, that is, the mixture of salts of the fatty acids, forms a curd at the top of the mix. The solution underneath the soap layer is withdrawn and the soap undergoes several processes of purification and adjustment of alkalinity. The entire process up to this point is continuous and requires about one week to complete. Perfumes, dyes, fillers, excess fatty materials, preservatives or numerous special medicaments may be added in small amounts to toilet or medicinal soaps; builders are added to laundry soaps; abrasives are added to special soaps, such as mechanics' hand soaps. Drying and various mechanical processes convert the soap into the physical state desired (bar, flakes, powder). It is thus seen not only that soap is itself a complex mixture of various chemicals but that to the soap itself a number of different substances may be added so that the final material, as used by the consumer, is very complex.

There is little excess free alkali in the toilet or laundry soaps being manufactured at the present time. Some years ago the manufacturers were not as careful to avoid the presence of residual free alkali and this led to the suggestion by Unna [17] of "superfatting" soaps for the purpose of neutralizing this free alkali. Siebert [18] showed, however, that the excess neutral fat does not react with any of the residual alkali. Klauder, Gross and Brown [14] state that superfatting agents do not affect the alkalinity which results from hydrolysis during the use of the soap.

2. Chemical Composition. In reviewing the action of soap on the skin, in the final part of this paper, it will be necessary to refer to the chemical composition of the commercial soaps. Such a complex material is difficult to analyze. In general the manufacturer is reluctant to divulge his formula because of the possibility of disclosing valuable information to his competitors. The composition of any one soap may change, depending on the market price of the raw materials, though the manufacturer must maintain a relatively uniform product in order to hold the good will of the public. A single raw material, such as an oil, will vary in chemical composition from time to time. Specifications, such as those used by the United States government [19] for the purchase of soap, permit the purchase of soaps which may vary somewhat in chemical composition.

Since there has been a recent comprehensive review of the composition of soaps with an extensive bibliography by Klauder, Gross and Brown,[14] we will limit ourselves to brief tabulations of the general composition of the various types of soap, the fatty acid composition of the oils commonly used for soaps and the range of fatty acid percentages in toilet soaps.

According to Hilditch [20] and the United States government specifications,[19] the various types of soaps may be made from the following oils:

A. Toilet soaps:
   1. Mixture of nut oils and tallow, with or without a soft oil, such as cottonseed.
   2. Practically exclusively nut oils.
   3. Nut oils, tallow and/or hydrogenated cottonseed, whale, soya bean, and so on.
   4. Palm oil and tallow.
   5. Palm oil with a soft vegetable oil.

B. Shaving soaps:
   1. Mixed nut oils and soft tallow.

C. Laundry cake soaps:
   1. Tallow, cottonseed, coconut, palm kernel or hydrogenated fish and vegetable oils.

D. Laundry chip soaps:
   1. Tallow, coconut and hydrogenated fish and vegetable oils.

E. Washing powders.
   1. Palm oil and tallow.

14. Klauder, J. V.; Gross, E. R., and Brown, Herman: Prevention of Industrial Dermatitis, with Reference to Protective Hand Creams, Soap and the Harmful Role of Some Cleansing Agents, Arch. Dermat. & Syph. **41**: 331-356 (Feb.) 1940.
15. Ittner, M. H.: The Soap and Detersive Industry, Indust. & Engin. Chem. **27**: 756-758, 1935.
16. Foley, J. L.: The Use and Abuse of Soap, Montreal M. J. **33**: 428-432, 1904.
17. Unna, P. G.: Ueber medizinische Seifen, Samml. klin. Vortr. Nr. 522. Abstracted Monatsh. f. Dermat. **4**: 341-342, 1885; cited by Mayer.[84]
18. Siebert, C.: Ueber die Reizwirkungen von Waschseifen und deren Beseitigung, Med. Klin. **18**: 1059-1060, 1922.
19. Circular 62, United States Government Bureau of Standards, Department of Commerce, 1923.
20. Hilditch, T. P.: The Industrial Chemistry of Fats and Waxes, New York, D. Van Nostrand Company, 1927.

Originally the term "castile" was applied to a soap which was made solely from olive oil. If the manufacturer so desires, however, he may now use this term to designate soaps made from oils other than olive.

Hilditch [20] says "the exact composition of fats varies widely according to the genus and even the species of the fruit." The composition of the fat of a single species of animal may vary with the climate in which the animal lives. The ranges for the percentages of individual fatty acids in some of the fats used by the soap industry have been compiled into table 1.

Some American soap manufacturers have been willing to supply us with what they consider to be the fatty acid content of an average toilet soap. The ranges of these analyses are given in table 2.

As already stated, builders are present primarily in laundry soaps and are used in toilet soaps only in small amounts if at all. They usually are sodium phosphates, silicates or carbonates. The new types of phosphates, which have been developed recently, are being substituted in part for some of the older builders. These materials increase the total available alkali in the soap. They differ from the inert fillers in that they enhance the detergent properties of soap solutions.

In American soaps, fillers are present in only small percentages. Sodium or potassium sulfates are found in soaps to the extent of approximately 0.5 per cent. Talc, clay, zinc oxide, titanium oxide and barium sulfate are used in fractional percentages in toilet soaps.

Almost all soaps are made from inorganic alkalis. Recently, however, the organic bases, particularly triethanolamine, have been used for the manufacture of some soaps. Fiero [21] found that triethanolamine soaps in general were not as good detergents as the soaps of inorganic alkalis. Since triethanolamine is a weaker alkali than, say, sodium hydroxide, the water solutions of soaps made with triethanolamine have a lower hydroxyl ion concentration than do equimolecular solutions of sodium soaps, or, in other words, the triethanolamine soaps are "less alkaline" than the sodium soaps.

3. Physicochemical Characteristics. Only a brief summary of the physicochemical properties of soap solutions will be given. Soaps are only sparingly soluble in water. In solution, hydrolysis always occurs and, even though a soap may be made from chemically equivalent amounts of alkali and fatty acid or even a slight excess of the fatty acid, an alkaline solution results. This is because the strong alkali is more strongly ionized than the weak acid. In general, the greater the percentage of high molecular weight fatty acids present in a soap, the higher the alkalinity of the solution, other factors being constant. Pure soap solutions have a range of alkalinity equivalent to one-seven thousandth to one-three hundredth normal sodium hydroxide solution (approximately 0.0006 to 0.013 Gm. of sodium hydroxide per hundred cubic centimeters); p_H determinations on 1 per cent solutions of commercial soaps range from 9.0 to 11.0. Lustig and Schmerda [22] have made a careful study of the solubility and hydrolysis of the sodium soaps of the individual fatty acids and mixtures of these soaps.

TABLE 1.—*Composition of the Fatty Acid Fraction of Some Classes of Oils Which May Be Used for Soap Manufacture*

(Figures Give the Ranges for the Percentages of Individual Acids)

Class of Oil	Seed Oils				Fruit Coat Oils	Animal Oils		Whale Oils
Examples	Coconut; palm kernel	Pine; linseed; teaseed	Cotton; corn; wheat	Castor	Palm; olive	Lard	Beef tallow; Mutton tallow	Sperm head; Sperm blubber
Major component acids	Lauric; Myristic; palmitic; oleic	Linoleic; linolenic; oleic	Palmitic; oleic; linoleic	Ricinoleic	Palmitic; oleic; linoleic	Palmitic; stearic; oleic	Palmitic; stearic; oleic	Palmitic; unsaturated C_{16}; unsaturated C_{18}
Minor component acids	Caprylic; capric; stearic; linoleic	Palmitic	Stearic; linolenic	Oleic; linoleic	Myristic; stearic	Myristic; linoleic	Myristic; linoleic	Lauric; myristic; unsaturated C_{14}; unsaturated C_{20}
Saturated								
Caprylic	3-9	..	..	..	..	..	..	..
Capric	4-7	..	..	..	..	..	..	..
Lauric	45-50	..	..	..	..	..	..	1-16
Myristic	15-18	..	..	..	1-4	1-4	1-7	5-14
Palmitic	7-9	5-10	10-23	..	10-50	20-28	21-30	6-20
Stearic	1-3		1-3	..	1-5	7-14	15-30	2-3
Unsaturated								
Palmitoleic	..	..	..	..	..	..	..	15-26
Oleic	5-18	10-50	25-45	7	40-80	35-60	36-48	
Linoleic	1-2	30-50	40-50	3	5-12	1-15	1-5	17-40
Linolenic	..	7-45	..	..	..	..	..	
Hydroxy								
Ricinoleic	..	..	..	88				

Compiled from Hilditch, T. P.: The Chemical Composition of Fats, New York, John Wiley & Sons, Inc., 1940.

TABLE 2.—*Composition of the Fatty Acid Fraction of an Average Toilet Soap*

Caproic acid	0 to 0.5
Caprylic acid	2.0
Capric acid	1.0 to 2.0
Lauric acid	11.0 to 12.0
Myristic acid	5.0 to 12.0
Palmitic acid	18.0 to 25.0
Stearic and higher saturated fatty acids	7.0 to 13.0
Oleic and other one double bond acids	38.0 to 40.0
More highly unsaturated acids	5.0 to 10.0

The presence of soap in solution always lowers the surface tension from 72.8 dynes per centimeter for distilled water at 20 C. to from 25 to 35 dynes per centimeter for the soap solutions.

21. Fiero, G. W.: Salts of Triethanolamine: II. Detergency, J. Am. Pharm. A. **28**: 284-285, 1939.

22. Lustig, B., and Schmerda, F.: Ueber die Löslichkeit der Natriumseifen. Ein Beitrag zur Pharmakologie der Seifenwirkung. Dermat. Wchnschr. **104**: 607-613, 1937.

The osmotic pressures of soap solutions (up to 5.0 per cent) are moderately high, in general lying between the values obtained for nonelectrolytes, such as cane sugar, and those obtained for electrolytes, such as sodium chloride. Electrical conductivities are relatively high.

Both the osmotic and the electrical activity of soap solutions can probably be accounted for by the physical composition of the solutions. Soaps in solution exist as true electrolytes, colloidal electrolytes and neutral colloids, all present in reversible and reproducible equilibriums. The simple ion is at times replaced by an ionic micelle (a fatty acid anion, combined with a fairly large number of molecules of neutral soap) which exhibits high conductivity and a great hydration.

4. Mode of Action. The mechanism whereby a soap solution removes oily soil or whereby soap aids water in removing oily soil from the surface of the skin is complex and not entirely understood but does make use of many of the physicochemical properties of soap solutions just mentioned. There is an extensive literature on this subject. It seems sufficient for the purpose of this discussion to cite only three major papers [23] which have appeared at about ten year intervals during the past twenty years. Each review has an extensive bibliography. The principles involved for soap are probably similar to the principles involved for the new detergents, and therefore they will be discussed only for soap.

The earliest explanation of how soap removes oily substances was that the alkali resulting from hydrolysis saponified the oils, thus making them water soluble. One still hears this explanation occasionally in spite of the fact that it was disproved some years ago. Saponification, i. e. the conversion of a glyceride into a soap and glycerin, takes place only when the fat is held at relatively high temperatures, in the presence of strong alkali, for long periods of time. None of these conditions apply to the customary cleansing with soap and water. Koppenhoefer [24] has recently shown that, in the presence of a much stronger alkali (saturated lime water in the liming of steer hides for leather manufacture) for long periods of time (five days) only the small phospholipid fraction of the epidermal lipids of steer hides is saponified. In cleansing our skins with soap and water we do not approach these conditions. If a soap should be used which had excess alkali, it might be possible that some of the free fatty acids of the natural skin fats would be neutralized; but the hydrolytic alkalinity of a neutral soap would not even do this and certainly it could not saponify any glycerides.

If instead of solubilizing the oily soil in water by saponification it can be stably suspended for a short period of time, it then can be easily removed. Emulsification of a fat is such a process, and many of the present day theories of the mechanism of detergence are concerned with the factors which favor emulsification. In order that the oil may be emulsified in the water it is first necessary for the oil and water to "come into contact" with each other. This is not as simple as it might at first seem, and substances which aid in establishing such a contact are termed "wetting agents."

A complete review of the various theories of emulsification and wetting would lead too far afield into colloid and physical chemistry. They are concerned primarily with surface tension, interfacial tension, orientation of molecules into monomolecular layers, McBain's theory of colloidal micelles, sorption, adhesion tension and contact angles. These factors vary for the soaps which have different detergent qualities. Bartell [25] has recently discussed the mode of action of the new detergents and has considered many of these factors.

An important property of all active detergents, as far as emulsification is concerned, is the presence of both a hydrophilic and a lipophilic radical in the molecule. The hydrophilic radical is attracted to the water, the lipophilic to the oil. Through some of the physicochemical phenomena that have been mentioned, this orientation of the detergent molecule aids in establishing contact between the water and the oily soil and in producing an emulsion of the soil in the detergent solution. This results in the rupture of the skin-soil interface and the establishment of two new interfaces, namely skin-detergent solution and soil-detergent solution. Cleansing takes place as a result of replacement of the emulsified soil by excess of the detergent solution and finally by solutions containing smaller and smaller quantities of the detergent, i. e. rinsing.

In soaps and also in many of the new detergents the lipophilic group is a hydrocarbon or slightly modified hydrocarbon group. In general the higher the molecular weight of the hydrocarbon group, the stronger its lipophilic properties. This may explain why soaps made from fatty acids of less than twelve carbon atoms are poor detergents. The hydrophilic groups of the more common detergents are as follows:

Soap: $-COONa$.
Sulfates: $-OSO_3Na$ or $-OSO_3H$.
Sulfonates: $-SO_3Na$ or $-SO_3H$.

Explanations of the mechanism of the removal of the insoluble soils make use of some of these same physicochemical principles. On the whole, however, much less work has been done on this problem. Some of the early workers felt that the insoluble particles were mechanically held on the material to be cleaned by the oily soils. The work of Spring,[26] however, in which he thoroughly removed all oil from fabrics and then soiled them with oil free insoluble materials such as lamp black, disproved this point. He felt that a sorption compound was formed between the soil and the fabric and that detergent solutions acted by breaking this compound and replacing it with sorption compounds composed of soil and the solution, and fabric and solution. He found that it is extremely difficult to rinse all the detergent from a fabric. Later workers [27] have actually determined the amount of soap adsorbed onto the fabrics under specified conditions.

Because of the natural oily film on the surface of the skin, there is probably little opportunity to form solid-skin sorption compounds, and the belief of the earlier textile workers that insoluble soil is removed by removing the oily film which holds it to the fabric probably applies to the great majority of cases of skin cleansing, and the problem of removal of insoluble soil from the skin itself is probably seldom met. The observation of

23. McBain, J. W.: Colloid Chemistry of Soap, in Third Report on Colloid Chemistry, British Association for the Advancement of Science, 1920, pp. 2-31. Fall, P. H.: Detergent Action of Soaps, J. Physical Chem. **31**: 801-849, 1927. Symposium: Wetting and Detergency, International Society of Leather Trades' Chemists, British Section, New York, Chemical Publishing Company, 1937.

24. Koppenhoefer, R. M.: The Lipids of Steer Hide: The Effect of Liming on the Lipids of Steer Hide, J. Am. Leather Chem. A. **32**: 210-230, 1937.

25. Bartell, F. E.: Wetting Agents, Indust. & Engin. Chem. **33**: 737-740, 1941.

26. Spring, W.: Einige Beobachtungen über die Waschwirkung der Seifen, Kolloid Ztr. **4**: 161-168, 1909; **6**: 11-17, 109-111 and 164-168, 1910.

27. Phillips, H.: Some Detergent Problems of the Woolen and Worsted Industries, Symposium: Wetting and Detergency,[22] p. 178.

these textile workers, however, that the detergent is adsorbed to the fabric may be very important in our consideration of the action of detergents on the skin. If, like fabrics, the skin adsorbs detergents, as it well might, then detergents cannot be completely rinsed from the skin with ordinary rinsing.

5. "Sterilizing" Action. The bacterial flora of the skin, for purposes of this discussion, has been considered a type of insoluble soil. It is probable that an explanation of the mechanism of the removal of insoluble dirt particles will also apply to the removal of bacteria.

The "sterilizing" action of detergents, usually soaps, has been studied by investigators in the field of skin hygiene more than any other branch of the subject of skin cleansing. General reviews of the germicidal value of soap were published by Diasio [28] and by Klarmann.[29] Extensive investigations into the germicidal properties of pure soaps, usually in vitro, have been made in this country by Walker,[30] Tilley and Schaffer,[31] Eggerth [32] and Bayliss,[33] the first and last mentioned of these articles containing good bibliographies. Soaps of the saturated fatty acids have been shown to increase in their germicidal activity up to a maximum as the molecular weight of the fatty acid increases and subsequently to decrease as the molecular weight is further increased. Soaps containing twelve, fourteen and sixteen carbon atoms have maximum germicidal activity. Soaps of unsaturated and hydroxyl fatty acids have greater germicidal activity than saturated fatty acids of equal numbers of carbon atoms.

Most of these investigators were forced to conclude that the soaps are not very good germicides against some of the types of organisms present on the skin, particularly the staphylococci. This led other workers to investigate the part played by detergents, not in killing the organisms, but in mechanically removing them —a true detergent action. Norton [34] showed that a large number of bacteria remain viable for periods of time up to five hours and probably longer in rinse waters containing 0.5 per cent of soap. He also showed that soap solutions allowed to dry on the skin for five minutes did not sterilize the skin surface. From a more thorough investigation of the removal of microorganisms from the skin by studying the bacterial content of successive rinse waters, Price [35] has concluded that "the transient flora of the skin may contain any number of pathogenic bacteria, the resident flora relatively few. . . . Scrubbing with brush, soap and water removes the transient flora readily, but the resident flora far more slowly. Scrubbing (in the manner described) degerms the hands and arms at a regular, logarithmic rate that is constant irrespective of the size of the flora. This rate of reduction, roughly, is by one half each six minutes of scrubbing. The largest variable effecting this rate is the amount of vigor used in brushing; the sort of soap used and the sterility and temperature of the water washed in are less important." Price's work has recently been confirmed by Pohle and Stuart.[36]

G. *New Detergents.*—When soaps are used with hard water, the fatty acids of the soaps combine with the calcium and magnesium salts of the water to form insoluble calcium and magnesium soaps. The latter soaps have no detergent value. When sodium soaps are used in the presence of acids stronger than the fatty acids from which they are made, these fatty acids and possibly acid soaps are precipitated from solution. In order to eliminate these two undesirable properties, new detergents have recently been developed which maintain their cleansing properties and do not precipitate in the presence of either calcium and magnesium salts or strong acids. These new detergents have recently been discussed and classified by Mullin [37] and Mack.[38] The former paper includes an extensive bibliography. Duemling [39] has recently discussed the use of these materials not as detergents but as materials to be used in preparing certain "cold cream" type ointment bases and for hastening the penetration of fats into the skin.

Many of these detergents are so new that their chemical compositions are not completely known and not much is known of their chemical and physical properties other than the generalizations about their stability in hard water and acid solutions as mentioned. A recent symposium [40] discusses some of the properties of surface-active agents, many of which are used as textile detergents and some of which are coming into use as detergents for the skin. This symposium includes a table of surface-active agents and gives both the trade names and chemical names so far as they are known. Attempt will be made here to do little more than to classify those detergents recently recommended for cleansing the skin and hair and those recommended for household laundering and dishwashing.

I. Sulfonated [41] oils. Oils, fats, fatty acids and waxes of animal or vegetable origin, which have been "solubilized" by treatment with concentrated sulfuric acid. Examples: Sulfonated [41] olive oil; sulfonated [41] oleic acid.

Skin detergents: Acidolate. Sulfolium. Sulfonated Castor Oil. Liquid Hand Cleanser. Dermalav. Mixtures recommended by Klauder, Gross and Brown.[14]

Shampoos: Admiracion; Mar-O-Oil.

II. Sulfated alcohols. Fatty alcohols esterified by treatment with concentrated sulfuric acid. Example: Sulfated lauryl alcohol.

Skin detergents: Pragmol.

Shampoo: Drene.

Household product: Dreft.

28. Diasio, F. A.: Germicidal Value of Pine Soap, M. Rev. of Rev. **40**: 421-431, 1934.

29. Klarmann, E.: Antibacterial Properties of Soaps, Soap **9** (no. 12): 23-27, 107-109, 111, 113 and 115, 1933.

30. Walker, J. E.: The Germicidal Properties of Soap, J. Infect. Dis. **35**: 557-566, 1924; **37**: 181-192, 1925; **38**: 127-130, 1926; The Germicidal and Therapeutic Applications of Soap, J. A. M. A. **97**: 19-20 (July 4) 1931.

31. Tilley, F. W., and Schaffer, J. M.: Germicidal Efficiency of Cocoanut Oil and Linseed Oil Soaps and Their Mixtures with Cresol, J. Infect. Dis. **37**: 359-367, 1925.

32. Eggerth, A. H.: The Effect of the *p*H on the Germicidal Action of Soap, J. Gen. Physiol. **10**: 147-160, 1926; Germicidal Action of Hydroxy Soaps, J. Exper. Med. **50**: 299-313, 1929.

33. Bayliss, M.: Effect of the Chemical Constitution of Soaps upon Their Germicidal Properties, J. Bact. **31**: 489-504, 1936.

34. Norton, J. F.: Soaps in Relation to Their Use for Hand Washing, J. A. M. A. **75**: 302-305 (July 31) 1920.

35. Price, P. B.: Bacteriology of Normal Skin: A New Quantitative Test Applied to a Study of the Bacterial Flora and the Disinfectant Action of Mechanical Cleansing, J. Infect. Dis. **63**: 301-318, 1938.

36. Pohle, W. D., and Stuart, L. S.: The Germicidal Action of Cleansing Agents: A Study of a Modification of Price's Procedure, J. Infect. Dis. **67**: 275-281, 1940.

37. Mullin, C. E.: The Newer Detergents, Soap **13** (no. 11): 30-33 and 74, 1937; **13** (no. 12): 27-30 and 73-74, 1937; **14** (no. 1): 30-33 and 74, 1938; Synthetic Detergents, ibid. **14** (no. 2): 32-35 and 73-74, 1938; **14** (no. 3): 30-33, 1938; **14** (no. 4): 32-33 and 73-74, 1938.

38. Mack, P. B.: Detergents and Detergency, Nat. Res. Council Annual Survey of American Chemistry **10**: 341-358, 1935.

39. Duemling, W. W.: Wetting Agents: New Synthetic Chemicals of Use in Finer and More Efficient Topical Therapy, Arch. Dermat. & Syph. **43**: 264-278 (Feb.) 1941.

40. Symposium: Surface Active Agents, Indust. & Engin. Chem. **31**: 31-69, 1939.

41. All of the substances belonging to class I are referred to throughout this review paper as sulfonated oils because in the literature reviewed this term is used in references to these substances. In this class of compounds the sulfur is linked to carbon through the oxygen atom; this is a characteristic of the sulfates and not the sulfonates, in which the sulfur is linked directly to the carbon atom. In other words, the sulfate group is $-OSO_3Na$ and the sulfonate group is $-SO_3Na$. The correct chemical term is sulfated oils and it would be more desirable to use this term.

III. Sulfated or sulfonated fatty esters or amides. Examples: Sulfated lauric acid amide; sulfated ethyl laurate; sulfonated lauric acid amide.
Skin detergents: Tersus; Lowila; Praecutan;[42] Satina.[42]
Shampoo: Halo.
Household product: Vel.

IV. Sulfonated alkylated aromatic hydrocarbons. Example: Sulfonated lauryl benzene.
Household products: Savex; Swerl.

V. Sulfonated ethers. Example: Sulfonated lauryl phenyl ether.
Skin detergents: Substances mentioned by van Antwerpen.[43] Substances mentioned by Guild.[44]

VI. Sulfonated aliphatic di-esters. Example: Sulfonated di-octyl succinate.
Skin detergents: Mixture recommended by French.[45]

VII. Phosphated or borated fatty alcohols. Examples: Phosphated lauryl alcohol; borated lauryl alcohol.

VIII. Sulfonated hydrocarbons. Petroleum hydrocarbons or their derivatives are "solubilized" by treatment with concentrated sulfuric acid. Examples: Sulfonated paraffin; sulfonated naphthenic acid.

IX. Fatty amine salts. Fatty amines are "solubilized" by the formation of their salts. Examples: Lauryl amine hydrochloride, lauryl amine acetate.

It was stated that the mechanism of the detergent action of these new materials would not be separately considered. As far as is now known, they act as detergents by means of the same physicochemical principles as operate in the case of soap. Each possesses both a hydrophilic and a lipophilic radical; all are good wetting agents; all are surface tension depressors; they probably form colloidal micelles in water solutions; they are good emulsifying agents. The efficiency of two such agents, Praecutan and Satina, in removing soil from the surface of the skin has recently been reviewed by Schmidt and Straub.[42]

The only one of the previously mentioned investigators working on the action of soap on bacteria who also studied the action of one of these new detergents was Bayliss.[33] He found that sodium lauryl sulfate has antiseptic powers approximately equivalent to those of soaps. Baker, Harrison and Miller,[46] using the Warburg apparatus, have studied the action of these new detergents on the metabolism of bacteria. Of the several classes of these materials mentioned, they found representative compounds of class IX to be the most effective inhibitors of bacterial metabolism.

It has been shown that the various types of soil may be removed by air, water, oils, oil solvents, soap and water or the new detergents and water. Mechanical action, evaporation, solution, emulsification, suspension and sorption are the most important principles concerned with the removal of soil from the cutaneous surface. Even though a major part of the soil is oil soluble or insoluble, water is the most commonly used substance for removing the soil. Soap is by far the most commonly used substance to aid in removing this soil. Emulsification is probably an important part of the mechanism whereby soap aids in the removal of soil. Soaps are efficient and cheap detergents and satisfactory, except for the relatively few persons who, as will be seen in the next section of this review, are appreciably irritated by soap. If some of the new detergents, which have only recently been shown to be satisfactory detergents for the skin, can be produced cheaply and can be shown to be less irritating to the skin than soap, they will probably be used by an ever increasing number of people.

42. Schmidt, P. W., and Straub, R.: Ueber die Reinigungskraft neuer, sogenannter hautschonender Waschmittel (Praecutan, Satina), München. med. Wchnschr. **87**: 1147-1150, 1940.
43. van Antwerpen, F. J.: Detergent Properties of Ether Sulfonates, Indust. & Engin. Chem. **31**: 64-66, 1939.
44. Guild, B. T.: Personal communication to the authors.
45. French, E. D.: Experiences with Hydrophil Bases and Sulfonated Products, South. M. J. **34**: 284-287, 1941.
46. Baker, Z.; Harrison, R. W., and Miller, B. F.: Action of Synthetic Detergents on the Metabolism of Bacteria, J. Exper. Med. **73**: 249-271, 1941.

V. ACTION OF DETERGENTS ON THE SKIN

In the preceding sections of this review the nature of the surface to be cleansed, the types of soil to be removed, the detergents used and the mechanisms whereby these detergents remove the soil from the cutaneous surface have been discussed. In this, the final, section the action of the detergents on the skin itself will be considered. Relatively little attention has been paid to this phase of detergence and little information can be obtained from other fields, as was the case with other phases of this problem, in which the textile literature was helpful. Most of the few studies which have been made have been concerned with the action of soap on the skin, but the action of water, oils and the new detergents on the skin have interesting aspects and will be reviewed briefly.

From a physiologic point of view the effects on the skin should be considered with regard to the detailed action of the various detergents on blood vessels, secretions and sensations. Up to the present time, however, not enough investigative work of this nature has been completed to justify a review from this point of view. Practically speaking, most persons are primarily concerned with the satisfactory cleansing action of a detergent and the resultant irritation of the skin as evidenced by itching, dryness, redness and scaling. Some of these questions can be answered more satisfactorily than the items about exact physiologic action.

A. *Action of Water on the Skin.*—The action of water on the skin varies considerably with the temperature of the water. All are familiar with the fact that the skin may become very red because of capillary dilatation, may exfoliate, blister or become necrotic and show scarring following contact with hot water. Also various changes occur as a result of cold water. Such effects, however, do not occur, except to a minor degree, when water of the correct temperature is used for cleansing purposes.

When water is in contact with the skin for some time, some hydration of the cells of the stratum corneum undoubtedly takes place. This hydration is probably at a minimum when the water has a p_H equivalent to the isoelectric point of the skin keratin. When the p_H of the water is either higher or lower than the isoelectric point, the hydration of the cells increases. This hydration may play some role in producing an irritation of the skin by the detergents which are used in conjunction with the water.

A patient will complain occasionally that water is "bad" for his skin. Others will state definitely that their skins itch, perhaps severely, after a bath, even when only water is used. Many complain that the hard water in a particular community "dries" the skin. No conclusive evidence has been found in the literature, however, that water by itself, either hard or soft, has any harmful effect on the skin. The calcium and magnesium salts in hard water are not present in high enough concentrations and do not impart a sufficient alkalinity to the water to injure the skin.

Of course, hard water is usually used in conjunction with soap, under which conditions insoluble calcium and magnesium soaps are precipitated onto the surface of the skin. Such a precipitate makes one's skin feel "dry." According to Jones and Lorenz,[47] these soaps form a film on the cutaneous surface, under which bacteria may multiply. Parkhurst [48] has reported negative results to regular patch tests to the precipitates which result from the reactions between soaps and hard waters. Nevertheless we feel that a precipitation of these soaps onto the surface of the skin may prolong the time the cutaneous surface remains alkaline subsequent to washing and may place fatty acids in immediate contact with the skin. Both of these factors, as will be seen later, are important in a consideration of the action of soap on the skin.

B. *Action of Oils and Oil Solvents on the Skin.*—Seldom is there found any harmful effect on the skin by liquid petrolatum or olive oil when either is used as a cleansing agent. Numerous persons have cleansed their skins with these oils for years with no evidence of irritation. To the contrary, small amounts of these oils left on the skin after cleansing probably serve as emollients. On the skin of persons using oil for cleansing purposes are found not infrequently scattered small pustules, and the oil folliculitis occurring in machinists and other workers in oil is well known. Occasionally a case of dermatitis due to a simple hydrocarbon, such as the case discussed by Hollander,[49] has been reported. It is conceivable that, if a vegetable or animal oil was used which had become rancid and had undergone some hydrolysis, the resulting fatty acids might be irritating to the skin. The exact cause of an irritation resulting from the use of an oily cosmetic is difficult to determine. It is not likely that it results from an irritation by, or an allergic hypersensitivity to, any hydrocarbon or glyceride of higher fatty acids in the cosmetic, since such materials are seldom irritating or allergenic.

Oil solvents undoubtedly remove some of the natural oils from the skin. Therefore they have a drying effect and thus irritate the skin. Irritations from the use of gasoline by mechanics and turpentine by painters, which are often more severe than simple dryness, are not infrequent.

C. *Action of Soap on the Skin.*—In spite of the fact that soap has been known since about 1500 B. C. and that as long ago as 1700, in a discussion of diseases of laundresses, Ramazzini [50] said "the sharpness of lye exposes them to 'chops' on their hands, which are sometimes so deep and troublesome as to be followed with an inflammation and fever," relatively little information is available to explain any possible action of soap on the skin.

1. Removal of Natural Oils: Frequent reference has been made to the ability of soap to act as an emulsifying agent and thereby remove the fatty substances from the cutaneous surface. If soap is used in excess, the skin is left "dry." For a skin basically deficient in the natural oils, this "drying action" may be the major effect of the use of soap. This is especially true of young children and elderly people. On the other hand, this "drying action" may be only the first step in the more complex action of soap on the skin. Welwart [51] and Schwarz [52] have emphasized this factor.

One of the purposes of "superfatting" was to prepare a soap which would be less "drying." Siebert [18] states that a small amount of the excess fat in a superfatted soap may be left on the skin after rinsing. If the total amount of excess fat in a soap is less than 5 per cent, as is usually the case, and if the skin is as well rinsed as it should be in order to remove as much soap as possible, surely little of the fat will remain on the skin. The object of cleansing is exactly opposite to the object of "lubricating" the skin and it does not seem that the two processes can be successfully carried out in the same operation. Therefore, since superfatted soaps are probably almost as "drying" as ordinary soaps and since, as was previously pointed out, superfatting reduces neither the excess nor the hydrolytic alkalinity of a soap, superfatted soaps may be expected to have the same action on the skin as do soaps which are made from the same oils but are not superfatted, and we agree with Klauder, Gross and Brown [14] when they state that "superfatted soap has been unduly emphasized as a toilet soap."

2. Alkali and Fatty Acid Irritation: The composition of soaps and their hydrolysis into alkali and fatty acids have been reviewed. Many writers, among whom are Gardiner,[53] Veyrières,[54] Mayer,[55] Ephraim,[56] Schwarz,[52] Hansen [57] and Reffy,[58] believe that the alkalinity of soap is primarily responsible for its irritating action. Some believe that the alkalinity of soap is great enough to bring about keratolysis. This seems unlikely, however, since keratin in general reacts slowly, if at all, to such a weak alkali. Pillsbury and Shaffer [4] found no marked reactions to patch tests with buffer solution until a p_H of 12.79 was reached.

The greater irritation produced by laundry soaps as compared to toilet soaps has been attributed to the higher alkalinity of the laundry soaps. Such a statement requires clarification. Solutions of most laundry soaps today have a p_H only slightly higher than solutions of toilet soaps. They do, however, contain greater amounts of alkaline builders than do toilet soaps, and these act as an "alkali reserve" to help maintain the alkalization of the cutaneous surface which is produced by soap. Also, and of greater significance perhaps, is the fact that almost invariably laundry soaps are used for much longer periods of time than are toilet soaps. It is likely that a person who shows irritation to the use of laundry soaps would also be irritated by toilet soaps should they be used for as long times as the laundry soaps are used.

Soaps of organic bases such as triethanolamine have come into use recently, particularly in cosmetics. They have been used occasionally as detergents, with the suggestion that they are less irritating because they are less alkaline. Goodman [59] stated that triethanolamine itself is not irritating to the skin. It is almost always

47. Jones, K. K., and Lorenz, M.: Relation of Calcium Soaps to Staphylococcal Infections in the Skin, J. Invest. Dermat. **4**: 69-80, 1941.
48. Parkhurst, H. J.: Toilet Soaps, Soap Substitutes and Hard Water: A Study of Various Combinations by Patch Tests, Arch. Dermat. & Syph. **43**: 299-310 (Feb.) 1941.
49. Hollander, Lester: Dermatitis Produced by Petrolatum: Report of a Case, Arch. Dermat. & Syph. **38**: 49-51 (July) 1938.
50. Ramazzini, Bernardino: Diseases of Tradesmen, Compiled by Herman Goodman, New York, Medical Lay Press, 1933, p. 48.
51. Welwart: Seife und Haut, Seifensieder Ztg. **62**: 667-669, 1935.
52. Schwarz, H.: Schädigungen der Haut durch Alkalien, Seifensieder Ztg. **62**: 1032, 1935.
53. Gardiner, F.: Soaps and Their Effects on the Skin: An Analytical Research, Edinburgh. M. J. **8**: 514-520, 1912.
54. Veyrières, F.: Hygiène de la peau: L'eau et la toilette, Rev. franç. de dermat. et de vénéréol. **7**: 102-105, 1931.
55. Mayer, R. L.: Toxicodermien, in Jadassohn, Josef: Handbuch der Haut- und Geschlechtskrankheiten, Berlin, Julius Springer, 1933, vol. 4, pt. 2, pp. 188-190.
56. Ephraim, J. W.: The Truth About Soap, Am. Mercury **32**: 109-113, 1934.
57. Hansen, P.: Einige Untersuchungen über die Einwirkung der Seife auf die Haut, Acta dermat.-venereol. **17**: 589-596, 1936.
58. Reffy, F.: Function of Soaps in Dermatology, Budapesti orvosi ujság **35**: 173-177, 1937.
59. Goodman, Herman: Cosmetic Dermatology: I. Triethanolamine, Arch. Dermat. & Syph. **36**: 116-118 (July) 1937.

used, however, in conjunction with some fatty acid which would result in the formation of a soap. Klauder, Gross and Brown [14] feel that, since triethanolamine soaps are still alkaline, they may be as irritating as ordinary soaps. Ray and Blank [60] found a high percentage of positive patch tests to some of the triethanolamine soaps. Apparently the lower alkalinity of the triethanolamine soaps does not make them less irritating than the soaps of inorganic bases.

Stauffer [61] and Jordon, Walker and Osborne [62] are opponents of the alkali theory of soap irritations, stating that patch tests did not indicate that the most alkaline soaps were the most irritating. Gardiner,[53] Goldman [63] and many other investigators state that soaps made from certain oils, particularly coconut, are more irritating than soaps made from other oils. This statement led to investigations of variations in the irritating action of different individual fatty acids by Blank,[64] who showed that the low molecular weight saturated fatty acids are more irritating than the high molecular weight saturated fatty acids. Subsequently, Emery and Edwards [65] showed that the sodium soap of lauric acid (twelve carbon atoms) is far more irritating than the sodium soaps of any of the saturated fatty acids, from eight to eighteen carbon atoms. Both investigations conclude that the high molecular weight acids, palmitic and stearic, are relatively nonirritating. Emery and Edwards [65] and also Mayer [55] state that the soaps of the unsaturated acids are more irritating than the soaps of corresponding saturated acids.

Blank [64] further showed by a special patch test technic not only that the low molecular weight fatty acids are more irritating than the high molecular weight acids but that many of the acids commonly present in soap become more irritating in the presence of small amounts of alkali. From these data it was concluded that neither the alkali alone nor the fatty acid alone is the causative agent in soap irritations but that each has some part to play.

3. Patch Tests: Patch tests were originally developed to aid in finding the causative agent for an allergic contact dermatitis. As a result of the early investigations in this field (reviewed by Bloch [66]), it was concluded that before a substance is to be considered a possible cause of an allergic contact dermatitis a patch test to that substance must show a reaction "in the form of an eczema, that is, besides redness and swelling, papules and vesicles must occur." This is frequently forgotten by present day workers, and substances which show only erythematous reactions are thought to be responsible for a dermatitis. This has been particularly true of soaps. Seldom are vesicular reactions seen to soap patch tests even if a very strong solution of soap or the soap itself is used for testing. Strong soap solutions and pieces of soap produce erythematous reactions on a large percentage of all individuals; occasional papular reactions are seen. Dilute solutions (1:50 to 1:500) produce erythematous reactions on some individuals. It is our opinion however that, when persons with normal skins (controls) are tested along with those who show suspected dermatitides from soap, no correlation can be found between erythematous reactions to soap patch tests and the presence of the dermatitis.

Most of the dermatitides from the use of soap occur in those individuals who find it necessary to be in contact with soap solutions for long periods of time (laundresses, dish washers, housewives). Under these conditions the cutaneous surface is kept alkalized. Regular patch tests with dilute solutions, and possibly with more concentrated solutions, do not keep the cutaneous surface in this same alkalized state, since the skin has the capacity to neutralize externally applied alkali, as has been shown by Burckhardt [67] for alkali and by Hansen [57] for soaps. Patch tests should duplicate actual clinical contact with the material in question, as nearly as possible, before the results of these patch tests are used to establish the cause of the dermatitis, especially when the patch test reactions are not vesicular. Regular patch tests with soaps do not duplicate clinical contact with soaps with respect to the degree and duration of the alkalization, the temperature of the skin or the amount of water present. No standard patch test for soaps has been established which definitely states the concentration of the solution or amount of solution to be used, the size of the test site, the position of the test site or the duration of the test, except possibly the type of test suggested by Emery and Edwards.[65] The degree of alkalization per unit area is not controlled; the time of alkalization cannot be controlled, since the neutralization of the alkali by the skin is variable. Thus the regular patch test must be considered of questionable value in diagnosing a dermatitis which follows the use of soap. Some modifications of the regular patch test have been suggested by various workers, but it is our opinion that none of the modifications are entirely satisfactory as a diagnostic indication in such a dermatitis.

4. Pathogenesis of a Dermatitis Due to the Use of Soap: In using the word "irritation" throughout this discussion, it was not intended to rule out the possibility of soap reactions having an allergic basis. As a matter of fact, in one of the references quoted [62] the authors state that soap irritations are allergic reactions. In a recent paper [68] these same workers again stress the allergic nature of soap reactions, though at times they use the terms "allergic" and "hypersensitive" interchangeably and do not prove that soap reactions are specific hypersensitivities, a prerequisite before they can be called allergic. Goodman and Sulzberger [69] and Klauder, Gross and Brown [14] on the other hand, state that they believe that true allergic hypersensitivity to soaps is comparatively infrequent. These differences in opinion seem to arise from the lack of accurate definitions and the present lack of absolute knowledge of the mechanisms of allergic reactions and of primary irritations.

Sulzberger [70] has recently compiled the following definitions: "Sensitive shall mean being capable of manifesting a reaction upon adequate exposure. Hyper-

60. Ray, L. F., and Blank, I. H.: Effect of Ointment Bases on the Skin: I. Results of Patch Tests with Commonly Used Ointment Bases, Arch. Dermat. & Syph. **42**: 285-289 (Aug.) 1940.
61. Stauffer, H.: Die Ekzemproben (Methodik und Ergebnisse), Arch. f. Dermat. u. Syph. **162**: 517-576, 1931.
62. Jordon, J. W.; Walker, H. L., and Osborne, E. D.: Studies in the Eczematizing Properties of Soaps, New York State J. Med. **36**: 791-795 (May 15) 1936.
63. Goldman, L.: Patch Tests with Soaps, M. Bull. Univ. Cincinnati **7**: 90-92, 1935.
64. Blank, I. H.: Action of Soap on Skin, Arch. Dermat. & Syph. **39**: 811-824 (May) 1939.
65. Emery, B. E., and Edwards, L. D.: The Pharmacology of Soaps: II. The Irritant Action of Soaps on Human Skin, J. Am. Pharm. A. **29**: 251-254, 1940.
66. Bloch, Bruno: The Role of Idiosyncrasy and Allergy in Dermatology, Arch. Dermat. & Syph. **19**: 175-197 (Feb.) 1929.
67. Burckhardt, W.: Beiträge zur Ekzemfrage: Die Rolle des Alkali in der Pathogenese des Ekzems speziell des Gewerbeekzems, Arch. f. Dermat. u. Syph. **173**: 155-167, 1935.
68. Jordon, J. W.; Dolce, F. A., and Osborne, E. D.: Dermatitis of the Hands of Housewives: Role of Soaps in Its Etiology and Methods for Its Prevention, J. A. M. A. **115**: 1001-1006 (Sept. 21) 1940.
69. Goodman, J., and Sulzberger, M. B.: Allergy in Dermatology: A Critical Review of Recent Contributions, J. Allergy **11**: 407-426, 1940.
70. Sulzberger, M. B.: Dermatologic Allergy, Springfield, Ill., Charles C. Thomas, Publisher, 1940.

sensitive shall designate more sensitive to a certain exposure than is usual, that is, than is the norm as determined by an adequate control group. Allergically hypersensitive will therefore describe the condition of those who have specifically acquired a state of sensitivity greater than the norm or control group." Are dermatitides resulting from contact with soap sensitivities, hypersensitivities or allergic hypersensitivities?

Such a dermatitis does result from an adequate exposure to soaps and is therefore a sensitivity, but the necessity of stating what is an "adequate exposure" at once becomes apparent. It is probable that, with long enough exposure to a concentrated enough soap solution, every one would show some reaction, just as almost all normal skins show mild reactions to forty-eight hour patch tests to pieces of soap. This fact, by itself, has led some investigators to conclude that soap dermatoses are primary irritations. If, on the other hand, patch tests are made with dilute solutions of soap (1 to 2 per cent) relatively few people show reactions. These patch tests might be compared to a clinical exposure to a small amount of soap, under which conditions most normal skins show no reactions. Therefore, dermatitides from soap, which occur with the use of only a normal amount of soap, are hypersensitivities, i. e. reactions which indicate a greater sensitivity to a certain exposure to soap than the average individual shows. Many physicians may also agree that soap dermatitides even in individuals who use excessive amounts of soap are hypersensitivities. Among the so-called normals there may be some persons whose skins would show soap irritations should their total exposure to soap be increased. But in the group which has excessive exposure to soap (housewives, domestics, dishwashers, laundresses, for example) relatively few manifest dermatitides of sufficient intensity to cause them to consult a physician, and about the same proportion of people might be expected to show a dermatitis from excessive use of soap, should every one be exposed to these large amounts of soap. Even in patients who develop a dermatitis from the use of relatively small amounts of soap, it is our impression that an exposure to a greater amount of the noxious agent (soap in this case) is necessary in order to produce the dermatitis than is required in the case of an allergic hypersensitivity to a commonly accepted allergen such as paraphenylenediamine.

These soap hypersensitivities are certainly acquired. Most dermatitides from the use of soap do not start until after adolescence. Goldman [71] has shown that newborn infants do not show positive reactions to patch tests with soaps. The histories obtained from almost all patients who seem to show a dermatitis from contact with soap indicate that this dermatitis developed after relatively long contact with soap in general and, even when the history points to a single soap as the causative agent, the dermatitis usually appears only after the soap has been used several times.

So far the requirements for allergic hypersensitivity have been fulfilled. But are these reactions specific hypersensitivities? The adherents of the allergy theory of dermatitides from soap have not proved that they are; the opponents of the theory feel that they have proved that they are not by showing that these patients react to any alkali. The latter statement, we believe, requires some confirmation. But, even if these patients do react to any alkali, one should still inquire if they are hypersensitive to alkalis; i. e., do they react more strongly to equal concentrations of alkali than normals, do they react to the same degree to weaker concentrations of alkali or do they react to the same concentration of alkali when exposed for a shorter period of time? If they are hypersensitive to alkali, could such a reaction be called a specific reaction to the hydroxyl radical, which, of course, is common to all alkalis?

Regarding the specificity of allergic reactions, Sulzberger [70] makes the following statements: Allergy is "any acquired specific alteration in the capacity to react, which occurs in living organisms or tissues upon exposure to certain living or inanimate agents or substances. The 'specific' refers to the fact that the alteration which is produced by a certain agent can be made manifest on reexposure to only that same agent or to an immunologically related agent." Allergists, in general, agree, as is implied in the foregoing statements, that allergic reactions are immune reactions of some type, even though in many cases the antigen-antibody system has not been demonstrated. The hydroxyl radical can hardly be thought of as an antigen according to our present concepts. Nor is it possible that any patient will manifest an immunologic reaction to the hydroxyl radical per se, because, if so, reactions would occur merely from the result of contact with the body fluids. It is within the realm of possibility, however, that at high concentrations the hydroxyl radical might conjugate with or alter certain tissue substances, resulting in the formation of new substances which might be antigenic. Landsteiner and Jacobs [72] have suggested that such conjugated antigens may be formed from relatively simple chemical compounds, and the later work of Sulzberger and Baer [73] tends to support this hypothesis. Thus, if it could be shown that the hydroxyl radical serves to initiate an immunologic reaction in the hypersensitive individual, the opponents of the allergic theory of dermatitides from soap could no longer oppose this theory on the basis that the soap "sensitive" individual reacts to alkalis. This has not yet been proved however and, until such a time as dermatitides from the use of soap can be shown to be specific, acquired hypersensitivities they cannot be called "allergic."

The one exception to these statements is the individual who can be shown to be specifically hypersensitive to a fatty acid or to a perfume, dye, antiseptic or some other added ingredient in soap. Such cases have been discussed by Lublinski,[74] Mayer [55] and Cady.[75]

Still another possibility exists. Some of the fatty acids are constituents of both the sebum and the sweat. Fatty acids, in the presence of alkali, have been shown to be irritating to some skins.[64] It is possible that a person who is thought to be hypersensitive to alkali alone is not showing this hypersensitivity to the alkali itself but to the fatty acids naturally occurring on the skin in the presence of the added alkali.

Many investigators have studied the penetration of the skin by various substances. No reference has come to our attention, however, which is concerned specifically

71. Goldman, Leon: Skin Reactions of Infants and Children to Soaps, J. A. M. A. **108:** 1317-1320 (April 17) 1937.

72. Landsteiner, K., and Jacobs, L.: Studies on Sensitization of Animals with Simple Chemical Compounds, J. Exper. Med. **61:** 643-656, 1935.

73. Sulzberger, M. B., and Baer, R. L.: Sensitization to Simple Chemicals: III. Relationship Between Chemical Structure and Properties, and Sensitizing Capacities in the Production of Eczematous Sensitivity in Man, J. Invest. Dermat. **1:** 45-58, 1938.

74. Lublinski, E.: Ueber die Hautentzündende Wirkung mancher Toiletteseifen und deren Ursache, Seifensieder Ztg. **50:** 4-5, 1923.

75. Cady, L. D.: What's Behind the Label? Hygeia **13:** 795-797, 1935.

with the penetration of soap solutions into the skin. It seems possible that variations in the irritability of different skins to soap solutions may be dependent on the ease of penetration of at least the stratum corneum of the skin. Perhaps the less alkaline triethanolamine soaps penetrate more easily than the more alkaline soaps of inorganic bases and are therefore more irritating. Investigations along these lines should prove fruitful.

The removal of the natural fats from the skin may play some part in producing dermatitides from the use of soap. Both the alkalinity and the nature of the fatty acid fraction of the soap are important factors. The alkalinity is never great enough to warrant saying that these dermatitides result solely from a direct chemical reaction between the alkali and the keratin. The penetration of soap or some of its constituents into or through the skin may play a role in producing soap reactions. Some alteration in the skin physiology may be necessary before the use of soap can produce a dermititis. Dermatitides from soap may have an allergic basis; but they cannot be classified as allergic at the present time, since they have not yet been shown to be specific, acquired hypersensitivities. The pathogenesis of a dermatitis from the use of soap is not yet clearly understood.

D. *Action of the New Detergents on the Skin.*—The new detergents are satisfactory skin cleansers but they have been used as skin detergents for such a short period of time that little is known about their action on the skin. Carpenter [76] and Biederman [77] reported isolated cases of irritations to the alcohol sulfates. Goldman [63] found 28 per cent positive patch tests to "sodium lorol sulfate." Emery and Edwards [78] showed by patch tests that the sodium alkyl sulfates are less irritating to the skin than the sodium salts of the saturated fatty acids from eight to eighteen carbon atoms.

Osborne and Putnam [79] and Schwartz [80] have reported irritations due to sulfonated oils of unknown compositions used on textiles. Blank [64] recommended the use of a mixture of sulfonated vegetable oils, liquid petrolatum and water as a detergent for contact and atopic dermatoses, reporting a very low percentage of irritations due to this detergent among 150 cases. A further clinical investigation of this same material was made in ten different dermatologic clinics, the results of which have been reported by Lane and Blank.[81] This sulfonated oil was used by patients with various diseases of the skin. The results of this investigation indicated that over 92 per cent of these patients could use this material as a detergent without aggravating their cutaneous conditions. Lane and Blank [82] have recently reported on the satisfactory use of this sulfonated oil material as the only detergent used over the period of one year in a nineteen bed dermatologic ward. Klauder, Gross and Brown [14] have found several different sulfonated oils to be satisfactory skin cleaners.

Jordan, Dolce and Osborne [68] have reported the satisfactory use of a detergent containing lauryl sulfoacetate for "27 patients who were allergic to soap." One of these was also allergic to lauryl sulfoacetate.

Among the various types of detergents used for cleansing the skin, water and the commonly used liquid petrolatum and olive oil seldom, if ever, irritate the skin. Some oil solvents and soap may irritate the skin of certain individuals. Among the new detergents, sulfonated oils and the sulfated alcohols have been the most extensively used as skin detergents up to the present time. These materials are still too new to allow a final evaluation of their effects on the skin, but it appears that many persons whose skins are irritated by the use of soap will be able to use one or more of these new materials without ill effect.

VI. COMMENT

It is readily apparent, from this review, that many points concerning the mechanism of the removal of soil from the surface of the skin by detergents and the action of these detergents on the skin itself are still controversial, but an attempt has been made to indicate the most satisfactory explanations, in our opinion, at the present time. Some of these points seem to us to deserve further emphasis.

Although water is used for removing the soil from the skin a major part of the time, the soil to be removed is mostly insoluble or oil soluble but not water soluble. The insoluble soil probably seldom gets into actual contact with the epidermal cells of the normal skin because of the more or less continuous film of oily sabaceous material on the surface of the skin. Of the detergents added to water to remove this soil, soap is the most commonly used. Cleansing with soap and water probably removes the insoluble soil by emulsification, not saponification, of the oily film which separates the insoluble soil from the skin proper.

Micro-organisms may be thought of as a type of insoluble soil and mechanical removal of these organisms, by the action just described, plays a greater role in skin "sterilization" by scrubbing than does the actual bactericidal action of the detergent which is used.

It has been stated that the skins of some people are irritated as a result of contact with detergents. At times this may be only a "dryness" resulting from the removal of the oil-soluble, endogenous soil which has served as a "lubricant." If a more severe irritation occurs and the detergent employed has been soap, the types of fatty acids in the soap and the degree and duration of the alkalization of the cutaneous surface caused by its use are factors which play some part in producing this irritation. The low molecular weight, saturated fatty acids, present in large amounts in coconut and palm kernel oils, are more irritating than the high molecular weight acids. Each of the fatty acids commonly found in soaps becomes more irritating in the presence of alkali. A factor which should be important in determining whether or not an individual will be irritated by a detergent is the ease with which that detergent will penetrate at least the stratum corneum of the skin. This factor has as yet received but little attention in the study of irritations due to detergents.

The sodium salts of the saturated fatty acids, which have a molecular weight equivalent to or less than myristic acid, are relatively irritating. These salts may constitute as much as one fourth of the actual soap in an average American made toilet soap.

76. Carpenter, C. C.: Dermatitis Produced by Hymolal Salts, Arch. Dermat. & Syph. **30**: 517 (Oct.) 1934.
77. Biederman, J. B.: Sensitivity to Drene Shampoo, New England J. Med. **217**: 1088-1089 (Dec. 30) 1937.
78. Emery, B. E., and Edwards, L. D.: The Pharmacology of Soaps: III. The Irritant Action of Sodium Alkyl Sulfates on Human Skin, J. Am. Pharm. A. **29**: 254-255, 1940.
79. Osborne, E. D., and Putnam, E. D.: Industrial Dermatoses, with Special Reference to Allergy and Mycotic Dermatitis, J. A. M. A. **99**: 972-977 (Sept. 17) 1932.
80. Schwartz, L.: Actual Causes of Dermatitis Attributed to Socks, Pub. Health Rep. **49**: 1176-1185, 1934.
81. Lane, C. G., and Blank, I. H.: Sulfonated Oil as a Detergent for Diseases of the Skin, Arch. Dermat. & Syph. **43**: 435-443 (March) 1941.
82. Lane, C. G., and Blank, I. H.: Sulfonated Oil as a Detergent: Its Use in a Dermatologic Ward, Arch. Dermat. & Syph. **44**: 999-1008 (Dec.) 1941.

Laundry soaps are usually considered to be more irritating than toilet soaps. There are two apparent reasons for this. The laundry soaps contain larger amounts of builders with the result that the total available alkali is greater, though the actual p_H may be little or no higher than the p_H of toilet soaps. Of more importance, however, is the fact that laundry soaps are invariably used for longer periods of time with a resulting alkalization of the cutaneous surface for a long time. It is probable that many people who show an irritation of the skin from the use of laundry soap would likewise be irritated by toilet soap should they use it for as long a time as they use laundry soap.

Superfatting of soaps does not reduce the alkalinity of soaps and little, if any, of the superfatting material is left on the skin after washing. It is difficult to perform satisfactorily both the cleansing and the lubrication of the skin in the same operation.

Although triethanolamine soaps are less alkaline than similar soaps of inorganic alkalis, regular patch tests have not indicated that they are less irritating to the skin. The penetration factor that has been mentioned may be important in this reaction.

The technic of making patch tests with soap has varied greatly. No standard technic has been agreed on, and it may be difficult to work out a technic which will satisfy all investigators and provide for the proper interpretation when all factors are considered. The concentration of the solution used and the amount applied have varied. Neither the patch test site nor its area has been constant. The duration of the test has varied. Thus the degree of alkalization per unit area is not controlled. Nor is the time of alkalization controlled, since the skin has the ability to neutralize externally applied alkali and the rate of this neutralization is not a constant factor.

Soap patch tests seldom show vesicular reactions. When reactions to patch tests which are not vesicular are being interpreted, it is important that the patch test technic duplicate as closely as possible the actual clinical contact with the material in question. Regular soap patch tests do not duplicate clinical contact with soap and must therefore be considered of questionable value in diagnosing dermatitides which are thought to result from the use of soap.

Since vesicular reactions to soap patch tests are seldom seen, the suspicion at once arises that dermatitides from soap are not allergic contact dermatitides. Since, however, a relatively few people have a dermatitis from soap, and since those who do have acquired it after previous contact with soap, these dermatitides can be called acquired hypersensitivities. They fail to meet the requirements of an allergic contact dermatitis only in that they have not yet been shown to be specific for any one substance.

The actual pathogenesis of a dermatitis from soap is not yet known. Though both the alkali and the fatty acid fraction play some role in producing a dermatitis, the mechanism is probably not that of a simple chemical reaction between either substance and the skin. Penetration of at least the stratum corneum may be important, as may also some alteration in the physiology of the skin, though nothing specific is yet known of either of these factors. The final classification of a dermatitis from soap must await a better understanding of its pathogenesis.

In many dermatoses which are not initially caused by the use of soap, its continued use may nevertheless aggravate or prolong the duration of the disease. A further complicating factor is the irritation which at times is produced by certain types of therapy. Frequently when a patient with a dermatitis presents himself to the physician it is difficult to decide the relative importance of the initial disease and the part played in producing the dermatitis by the previous therapy and by the removal of ointments by various detergent methods. An atopic dermatitis, for instance, may be complicated by the use of an ointment containing tar and by the excessive amount of soap and water used to remove the ointment stains.

Cleansing agents, such as strongly alkaline soaps, oils and oil solvents, are an important factor in the causation of occupational dermatitis. About one third of all dermatitis caused by work occurs in those occupations in which the workman's skin is in frequent contact with soap or other alkaline materials,[83] and, in addition, many housewives are not included in any compilation of cases. Studies have been made by various single industries to determine the part played by soap in causing the occupational dermatoses of that industry. In some industries, even though it may not be necessary for the workmen to come in contact with soap or other detergents frequently, nevertheless the dermatitis may be caused, or at least accentuated, by the detergent rather than by any substance used by the workman while carrying out his duties. The Committee on Healthful Working Conditions,[84] Schwartz and Tulipan [85] and Klauder, Gross and Brown [14] have recently discussed the cleansing process in relation to industrial dermatitis and have recommended methods for preventing such dermatitis from occurring as a result of improper cleansing technics. More and more attempts are being made by industrial management to establish cleansing methods which will not irritate the skin of the workmen.

Many new wetting agents are finding use as detergents for cleansing the skin. Some of these materials, which were formerly considered cutaneous irritants, have now been shown to be nonirritating when properly made and have been satisfactorily substituted for soap under conditions in which soap has been found to be irritating.

In spite of the large amount of material existing on the subject of detergents, there remain numerous fundamental problems to be solved. Further elucidation of the process of cornification of the skin would be valuable, as well as a study of the factors affecting penetration of detergents and other substances into the various layers of the skin. The exact action of detergents in the removal of soil and on the skin itself calls for further investigation. The pathogenesis of a dermatitis from the use of detergents especially, and the development of a reliable standard patch test or other tests to aid in the proper interpretation of the causal factors of such a dermititis, are subjects for consideration by laboratory and clinical workers. With further research on some of these fundamental subjects there would undoubtedly be developed more effective and safer detergents and perhaps a more effective method of skin sterilization without injury to the skin.

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83. Lane, C. G.: Skin Diseases with Particular Reference to Their Industrial Application, J. Indust. Hyg. **7**: 444-450, 1925.
84. Committee for Healthful Working Conditions, National Association of Manufacturers: Industrial Dermatitis, Indust. Med. **9**: 319-322, 1940.
85. Schwartz, Louis, and Tulipan, Louis: Occupational Diseases of the Skin, Philadelphia, Lea & Febiger, 1939, p. 37.

Council on Industrial Health

MEDICAL SERVICE IN INDUSTRY

THE COUNCIL ON INDUSTRIAL HEALTH HAS APPROVED THIS ARTICLE AS THE FOURTH IN A SERIES ON MEDICAL SERVICE IN INDUSTRY.

C. M. PETERSON, M.D., Secretary.

PLANT HYGIENE STUDIES

The location, identification and control of unhealthful occupational exposures is a primary function of the industrial physician. Technically, an exposure is defined as any working condition or environment, process, operation or material used in manufacturing which is capable of causing harmful physical effects. These may, on occasion, be so obvious that workers themselves are perfectly familiar with their source. Most frequently periodic physical examination of employees will prove to be the most sensitive index of the effect on workmen of industrial exposure and inadequacy of control measures. Elsewhere, discovery requires diligent combined effort by highly trained medical and engineering personnel. In any case, systematic methods are essential in order that dependable data may be secured on which a program of adequate control can be based. Plant hygiene studies have proved to be reliable and to require least expenditure in time and money. The procedure is essentially one of taking periodic inventory of unsatisfactory occupational risk.

LOCATION OF EXPOSURES

Experience in large and small industrial establishments suggests that plant hygiene studies are likely to be most successful if certain steps are followed:

1. A complete list of all materials used in manufacture should be secured. Those capable or suspected of causing trouble should be suitably indicated on the list.

2. All steps in manufacture should be described, preferably in the form of a diagram or schematic representation, to indicate the flow of goods from raw material to finished product.

3. Thorough inspection of the working premises is essential to test conclusions drawn from the inventory of materials and processes and to evaluate other conditions of work which are potential contributors to disability and lowered production. It must not be forgotten that harmless substances may under certain conditions or in susceptible individuals become harmful. In the same way, no matter how much care has been expended in preliminary investigation, additional or unsuspected sources of exposure will be missed unless every aspect of the working environment is carefully scrutinized.

4. A record should be made of every material, process or environment capable or suspected of causing injury or disease, the exact location of each, and the number of workers exposed.

IDENTIFICATION OF EXPOSURES

Exposures are important by nature, extent and the degree to which they may be controlled. Most industrial hygienists believe that sufficient information exists about control methods in general to permit safe handling of all but very new or recently introduced substances in industry.

Problems of this nature likely to be encountered by the physician in industry are extremely diverse and widespread. Efforts have been made to classify them. One of the most useful outlines is the following, taken from Bulletin 41 of the U. S. Department of Labor, "Occupation Hazards and Diagnostic Signs," by Louis I. Dublin and Robert J. Vane, 1941.

A. Abnormalities of air pressure.
B. Abnormalities of temperature and humidity.
C. Dampness.
D. Defective illumination.
E. Dust.
F. Infections.
G. Radiant energy.
H. Repeated motion, pressure, shock.
J. Poisons.

Subheadings under the major title of poisons are most numerous, and a complete list of all substances capable of causing local or systemic effects is a very considerable one. In the case of allergic manifestations arising from industrial substances, the list of potential exposures becomes almost endless.

ENGINEERING STUDIES

Following location and identification, the physician should indicate in the record his estimate of the seriousness of each exposure. If doubt exists about its exact nature or satisfactory control, assistance is needed from an industrial hygiene engineer. In fact, confirmation about the severity of most exposures is often highly desirable and it is routine practice in many manufacturing concerns for an engineer with suitable qualifications to verify all preliminary estimates. Qualitative and quantitative analyses of each exposure are available in this way for use as factual evidence if necessary. All determinations of this character should be suitably entered in the records.

CONTROL OF EXPOSURES

As soon as the industrial physician has established a source of occupational disability he must set the machinery in motion for adequate control. Since the physician must in many situations recommend specific control measures or pass judgment on the effective nature of proposed or existing installations, a knowledge of the fundamentals of industrial hygiene engineering is a most useful piece of equipment for him to possess. Control procedures fall in one of the following major classifications:

1. Substitution—harmless materials are substituted for those causing trouble.
2. Alterations in processing or manufacturing.
3. Segregation of operations.
4. Capture of dusts, fumes, mists, vapors or gases at the point of origin.
5. Use of personal protective equipment.

The actual application of these general principles often requires a high degree of specialized knowledge and technical skill obtainable from properly qualified engineers and industrial hygienists.

NEW PROCESSES

All new processes, materials or modifications of old ones should be investigated in much the same way and in advance of installation to prevent the introduction of unexpected exposures.

MAINTENANCE OF CONTROL

Plant medical inspections are an essential phase of control maintenance and consequently of the industrial physician's routine. These inspections should occur periodically. Sites of greatest exposures need frequent attention, possibly constantly repeated chemical and engineering evaluation. Others are visited in relation to their importance. Periodic plant walks by the medical department personnel throughout the entire establishment is particularly sound practice. Occasionally, inspections should be made in company with officers of the firm, particularly those responsible for production, personnel, plant conditions and safety. Active interest and cooperation from management is quite as great an element of successful medical department administration as cooperation from the workmen. Employees most emphatically need instruction and regular supervision in order that adequate understanding may exist about the continuous and proper use of protective devices.

The record system of the medical department should contain copies of recommendations leading to the installation of control measures, the date of installation and the dates of and special notations about follow-up visits and inspections. Forms can readily be devised which will facilitate the uniform recording of all results of plant inspection.

Medical inspection has additional advantages. It provides opportunity for thorough familiarity with every job in the plant. Information of this character is of the greatest usefulness in relating work assignments to the physical and temperamental qualifications of workmen. It is reassuring to employees

to know that plant conditions are under observation by medical personnel. It is equally satisfactory to employers to realize that proper records are available in case claims arise out of alleged unhealthful conditions of work.

APPLICATION IN SMALL PLANTS

The physician serving a small plant should be guided in his approach to unhealthful exposures by these same general principles. Frequently he will need special technical assistance. Committees on industrial health are being developed in state and county medical societies in order that the practicing physician called on to serve in industry may have access to ready sources of consultation and special information. Preliminary plant hygiene studies should in many cases be arranged through qualified consultants. Obscure exposures will require aid of this same description.

Assistance can frequently be secured by application to experienced industrial physicians or industrial hygienists. Occasionally consulting services are provided by insurance companies or trade associations to member companies. A few city and county health departments have established bureaus of industrial hygiene for investigation and consultation about occupational exposures. If local resources fail, assistance may be sought through bureaus of industrial hygiene in state health or labor departments, and these in turn have the advantage of specialized information and investigating facilities supplied by the Division of Industrial Hygiene of the United States Public Health Service.

Council on Foods and Nutrition

THE COUNCIL ON FOODS AND NUTRITION HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT. FRANKLIN C. BING, Secretary.

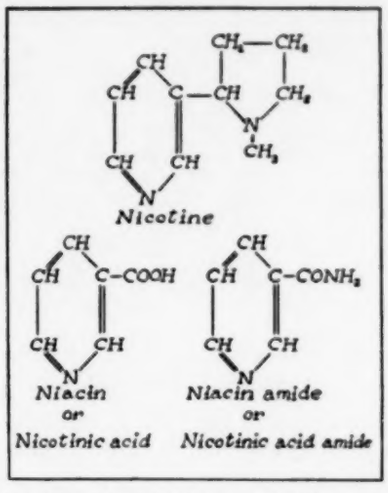
NIACIN AND NIACIN AMIDE

The name "nicotinic acid" was coined many years ago because this compound was first made by oxidation of nicotine in the laboratory. These two substances, so similar in name, are only remotely related to each other. Nicotinic acid, or pyridine-3-carboxylic acid, is an oxidation product or a derivative formed by the destruction of nicotine. Nicotinic acid is a vitamin that is essential in the diet; and nicotine, of course, is a well known toxic substance. No difficulties were experienced with the name "nicotinic acid," however, until after its vitamin properties were discovered in 1938. It soon became apparent that the names "nicotinic acid" and "nicotinic acid amide" were likely to cause unwarranted apprehension in the minds of the general public whenever these terms appeared in advertising or in the labeling of food products. Enriched flour and enriched bread are required to contain definite amounts of nicotinic acid or of nicotinic acid amide to be entitled to bear the designation "enriched."

Recently the Food and Nutrition Board of the National Research Council appointed a committee, consisting of Drs. C. A. Elvehjem, W. H. Sebrell and T. D. Spies, to consider the problem and to select unobjectionable synonyms for these terms if the committee considered such action to be desirable. This committee gave much thought to the problem and made a number of recommendations. The Food and Nutrition Board adopted the recommendation of the committee that "niacin" and "niacin amide" be accepted as synonyms for "nicotinic acid" and "nicotinic acid amide" respectively. Registered trade marks in the Patent Office and copyrights in the Library of Congress have been studied and no conflict has been found with these proposed names. The recommendation was also made that the terms "nicotinic acid" and "nicotinic acid amide" be used as first choice in all scientific literature and that the new terms be used only when there may be misunderstanding on the part of the general public.

Federal Security Administrator Paul V. McNutt has announced that in his opinion the synonyms will not be inconsistent with the requirements of the Federal Food, Drug and Cosmetic Act for the purpose of declaring "nicotinic acid" and "nicotinic acid amide" on the labels of products subject to this act.

The members of the Council on Foods and Nutrition were informally polled about these terms before they were adopted by the Food and Nutrition Board. The Council now has voted



Structural formulas of niacin and related compounds.

that the terms "niacin" and "niacin amide" will be acceptable as synonyms for "nicotinic acid" and "nicotinic acid amide" respectively when used in connection with products and considerations that come within the scope of this Council. Niacin is pronounced with a long "i" and a soft "c" (nai'a-sin).

ACCEPTED FOODS

THE FOLLOWING ADDITIONAL FOODS HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO ACCEPTED FOODS.

FRANKLIN C. BING, Secretary.

PREPARATIONS USED IN THE FEEDING OF INFANTS (*See* Accepted Foods, 1939, p. 156).

Harold H. Clapp, Inc., Rochester, N. Y.

CLAPP'S JUNIOR FOODS BRAND PINEAPPLE ORANGE RICE PUDDING, a canned cooked mixture of milk, pineapple, sugar, orange juice, rice, farina, eggs and salt.

Analysis (submitted by manufacturer).—Total solids 27.1%, ash 0.5%, fat (ether extract) 1.0%, protein (N × 6.25) 1.8%, crude fiber 0.1%, carbohydrate (by difference) 23.7%, calcium (Ca) 22.8 mg. per hundred grams, phosphorus (P) 14.1 mg. per hundred grams, iron (Fe) 7.6 mg. per hundred grams, copper (Cu) 0.04 mg. per hundred grams.

Calories.—1.1 per gram; 31.5 per ounce.

UNCLASSIFIED AND MISCELLANEOUS FOODS (*See* Accepted Foods, 1939, p. 351).

Hardy Salt Co., St. Louis.

HARDY'S STABILIZED IODIZED SALT.

Analysis (submitted by manufacturer).—Sodium chloride 98.5%, potassium iodide 0.010%, moisture of 0.10-0.15%, calcium sulfate 0.75%, basic magnesium carbonate 0.50%, sodium thiosulfate 0.012%, calcium chloride 0.05%, magnesium chloride 0.02%.

VEGETABLES AND MUSHROOMS (*See* Accepted Foods, 1939, p. 340).

General Foods Corporation, Chicago.

BIRDS EYE BRAND QUICK FROZEN BROCCOLI.

Analysis (representing typical analysis submitted by manufacturer).—Moisture 90.02%, reducing sugar before inversion (as invert) 1.00%, reducing sugar after inversion (as invert) 1.52%, sucrose (calculated) 0.49%, starch 0.33%, crude fiber 1.02%, protein (N × 6.25) 3.44%, ether extract 0.33%, ash 0.81%, undetermined 2.56%.

Vitamins.—The average vitamin content of this product according to chemical analyses furnished by the firm is: vitamin A 4,700 international units per hundred grams, thiamine 0.088 mg. per hundred grams, riboflavin 0.096 mg. per hundred grams, ascorbic acid 78 mg. per hundred grams.

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SATURDAY, MARCH 7, 1942

THE ATLANTIC CITY SESSION

The American Medical Association is scheduled to hold its annual session for 1942 in Atlantic City in the week June 8-12. Plans have been going forward steadily for this important meeting. Long before the United States entered the war, the House of Delegates and the Board of Trustees had agreed to endeavor to make this session an inter-American meeting, as an indication of the close relationship in medicine prevailing among all the American nations. The Council on Scientific Assembly and the secretaries of the various sections have been enlisting the attendance of physicians from the other American nations, including also contributions to the program and to the Scientific Exhibit.

Already there are indications that many of the South American nations are inclined to participate. The Brazilian government has offered some exhibits dealing particularly with yellow fever and malaria. Subject of course to the difficulties of transportation, there is definite promise of the attendance of some of the leading figures in medicine in South America, Canada, the West Indies, Mexico and Central America. As a part of the promotion of inter-American relations, some of the leading foundations in the United States have brought to this country young physicians who are now serving internships in American hospitals or who are undertaking graduate education or research in American medical schools and universities. No doubt many of these South American representatives will attend the annual session. Moreover, the Coordinator of Inter-American Affairs has also agreed to aid in the promotion of this project. The Department of State is arranging to extend an invitation on behalf of the American Medical Association to the official medical societies of all the South American countries. Every effort is thus being made to insure a successful conclusion to the project under the extremely difficult conditions which now prevail.

The medical profession of Atlantic City and of New Jersey are doing their utmost to insure a successful meeting; several events of special interest in relation to the war are being scheduled. Official representatives of various governmental agencies concerned with the medical participation in the war have promised to be present and to contribute to the program.

A few physicians have written to the American Medical Association suggesting the abandonment of the annual session for fear that enemy naval vessels or aircraft might select Atlantic City as the special object of their ministrations during the time of the annual session. The vast majority of the medical profession of the United States and the representatives of various governmental agencies who have been consulted have felt that the meeting should by all means be held as originally planned. In this issue a list of hotels and advice concerning the making of reservations appears on page 38.

DISABILITY INSURANCE AND HOSPITALIZATION PAYMENTS

The following editorial, because it deals with a matter of importance relating to possible current legislation, has been especially authorized and approved by the Board of Trustees of the American Medical Association.

In his budget message to the second session of the Seventy-Seventh Congress, January 7, President Roosevelt recommended "an increase in the coverage of old age and survivors' insurance, addition of permanent and temporary disability payments and hospitalization payments beyond the present benefit programs, and liberalization and expansion of unemployment compensation in a uniform national system." On Jan. 20, 1942 a communication from the President was sent to the House of Representatives requesting $300,000,000 for "extended unemployment compensation benefits." This recommendation apparently is not related to the proposed disability and hospitalization payments but refers only to problems of unemployment occasioned by the changing of industrial plants from the production of peace time goods to the production of war materials. Officially, this is the status of a recommendation thrown by the President recently into the whirlpool of public opinion. The discussion of the problem is agitating leaders in the fields of prepayment plans for medical care and hospitalization, hospital management and medical practice.

Various conferences in Washington with representatives of the Social Security Board yield the impression that the proposal of the President involves primarily a plan to increase taxation under the Social Security Act by 1 per cent, of which 0.5 per cent is to be paid by the worker and 0.5 per cent by the employer, with a view to providing every insured worker or his dependents during periods of hospitalization with the sum of $3 a day. The plan would involve also allowances in cash to cover disability equal to the present allowances for unemployment during periods of sickness. This proposal apparently had its origin in the report of the Technical Committee on Medical Care, which introduced the so-called National Health Program in the

National Health Conference in Washington in 1938. At that time the House of Delegates of the American Medical Association held a special session to give consideration to the national health program. The Reference Committee on Consideration of the National Health Program in a report adopted by the House of Delegates said:

> Your committee approves the principle of hospital service insurance which is being widely adopted throughout the country. It is susceptible of great expansion along sound lines, and your committee particularly recommends it as a community project. Experience in the operation of hospital service insurance or group hospitalization plans has demonstrated that these plans should confine themselves to provision of hospital facilities and should not include any type of medical care.

The committee also said:

> In addition to insurance for hospitalization your committee believes it is practicable to develop cash indemnity insurance plans to cover, in whole or in part, the costs of emergency or prolonged illness. Agencies set up to provide such insurance should comply with state statutes and regulations to insure their soundness and financial responsibility and have the approval of the county and state medical societies under which they operate.
>
> Your committee is not willing to foster any system of compulsory health insurance. . . .

Considering particularly the question of insurance against loss of wages during sickness, the report of the committee said:

> In essence, the recommendation deals with compensation of loss of wages during sickness. Your committee unreservedly endorses this principle, as it has distinct influence toward recovery and tends to reduce permanent disability. It is, however, in the interest of good medical care that the attending physician be relieved of the duty of certification of illness and of recovery, which function should be performed by a qualified medical employee of the disbursing agency.

Following the meeting of the House of Delegates in 1938 came the recommendations of the Interdepartmental Committee to Coordinate Health and Welfare Activities. This group recommended the development of social insurance to insure partial replacement of wages during temporary or permanent disability. Senator Robert Wagner of New York, in the well known proposed National Health Act, S. 1620, and in subsequent proposed legislation, also endeavored to include plans for disability compensation and indeed to provide medical service in addition to compensation.

In numerous addresses and in hearings before legislative bodies since 1938, Mr. Arthur J. Altmeyer, chairman of the Social Security Board, has continued frequently to suggest cash benefits to persons unemployed because of sickness and the provision of constructive social services to supplement cash aids, including medical care. Obviously every proposal for expansion of the social security program must, therefore, be viewed in the light of the ultimate goal set by Mr. Altmeyer. Even though the House of Delegates of the American Medical Association apparently approved unreservedly the principle of cash benefits for those sustaining loss of wages because of sickness, the provision of cash payments of $3 a day to the worker who is hospitalized must be considered as part of a movement toward complete plans for compulsory sickness insurance on either a cash or a medical service basis. As evidence of the apparent inseparability between disability benefits and medical and hospital care, workmen's compensation acts under which an injured worker is supplied with cash benefits for disability and also with necessary medical and hospital care, are cited.

The new proposals of the President, apparently emanating from the Social Security Board, must not be viewed in the light of circumstances as they prevailed in 1938 but in the light of conditions as they exist today. The intervening period has witnessed an extraordinary expansion in voluntary hospitalization insurance and in so-called medical service plans. Today some fifteen million persons are insured against the costs of hospitalization in a variety of agencies, including private insurance corporations, mutual nonprofit plans like the Associated Hospital Service of New York, and hospitalization plans set up on a nonprofit basis in various states. At least fourteen states and numerous counties have developed voluntary plans to cover the costs of medical care. An extensive experimentation is now in progress which should lead ultimately, if not too greatly disturbed, to the development of procedures distinctly American in their characteristics and wholly capable of meeting the needs for medical and hospital service. These are likely to be adapted to the American system of government rather than modeled after those plans of medical care and hospitalization which have prevailed in foreign countries, and which have been developed under concepts that are socialistic, communistic or totalitarian rather than democratic.

The Annual Report of the Social Security Board for 1940 indicates that that agency contemplates nothing short of a complete system of compulsory sickness insurance. Thus the report states:

> Studies of illness and disability as a cause of economic insecurity were continued during the year, and consideration was given to proposals for extending the social security system to include the risk of ill health and disability.

Moreover, there are indications that the Social Security Board has been much concerned with the question

> whether the development of a program of medical care in connection with the three assistance programs under the Social Security Act would assist or hamper the development of a broader program of medical care for those groups in our population who are not now able to obtain needed services.

In fact, Mr. Arthur J. Altmeyer stated his point of view positively to the Congress when he said in July 1941:

> Our eventual goal should be the establishment of a well rounded system of social insurance to provide at least a minimum security to individuals and their families due to unemployment, sickness, disability, old age and death. In addition, we must provide a series of constructive social services to supplement the cash aids provided under social insurance. Medical care should be available to individuals and their families so

that we may build a healthier, happier nation. Such a system of medical care would be instrumental in reducing the costs of cash payments for sickness and disability.

From these statements it is clear that the goal of the Social Security Board is definitely a nationwide system of compulsory sickness insurance. Obviously, then, every proposal for expansion of social security must be considered in its relation to that goal.

Specifically, nevertheless, the present proposal is for the payment of $3 for each day the worker is hospitalized. This blunt statement without qualification must, of course, be translated into proposed legislation before all its implications can be fathomed. The proponents of voluntary hospitalization and medical service plans have felt that the enactment of such legislation would sound the death knell of their voluntary proposals. Even they, however, are not of one mind in their approach to the problem. Indeed, some have indicated that they might not look askance on the proposal if the technic concerned would involve payment of the cash benefit directly to such plans rather than directly to the insured patient. This would mean recognition by the government of the prepayment plans as the official agency in the field of hospitalization and medical care. Representatives of medical and hospital service plans definitely propose that the Federal Security Administrator issue a complete endorsement of such existing prepayment plans and that he urge all communities to form similar organizations. Such a pronouncement would be premature. Most of these plans are still largely experimental; they cover, for the majority of the insured, only hospitalization and surgical fees. Few of these plans have yet secured much more than a slight majority approval of either the medical profession or the public which they would serve. Many questions as to the cost of promotion and maintenance and the character of the control of voluntary hospitalization and medical care plans remain unanswered. These were no doubt some of the considerations which caused the House of Delegates of the American Medical Association, at its 1941 session, to request the Bureau of Medical Economics to make a comparative study of medical service plans for submission to the House of Delegates in 1942. Until voluntary efforts have shown themselves incapable of meeting existing needs, they should be encouraged rather than discouraged or even destroyed by forms of government competition or intervention. By contrast government plans are costly to administer and inefficient in operation; they are even more experimental than the voluntary plans, and they function on such a huge scale as to make relief from them well nigh impossible once they are established.

Consideration of the proposed $3 per diem payment for hospitalization costs for workers and their dependents must depend, therefore, first on the merits of the proposal itself and second on its relation to the proposed goal of a complete compulsory sickness insurance plan. Among the important objections to the $3 per diem payment plan is the fact that the contribution would cover only a portion of the cost of necessary hospital care as defined in most of the voluntary hospitalization plans. The establishment by the government of a fixed price per day for hospital services would inevitably tend here, as always in the past, to cause deterioration of such service to meet the fixed price. Workers would feel, no doubt, that the payment of a $3 fee was the government's evaluation of what proper hospital service should cost. While the fee might be nearly adequate in rural areas, it would, of course, be wholly inadequate in urban centers.

The voluntary hospitals of the United States now provide an essential service to the American people. These hospitals have grown as a community interest; many of them are founded in that tenet of most religions which states that the care of the sick is one of the highest moral functions that mankind can fulfil. Federal payment and control of hospitalization costs would destroy local, religious and private community interest in the maintenance of voluntary hospitals, thus jeopardizing their future and inhibiting the initiative to assist them. The proposal involves, as one may observe from the statements of representatives of the Social Security Board, increased federal funds for new hospital construction. Already such appropriations as the government has made have tended to freeze the flow of bequests and donations for nonprofit voluntary hospitals. With these concepts in mind, representatives of various organizations in the field of the hospital are emphasizing in this critical time that the voluntary hospitals are a national asset of incalculable value, that their efficiency is traceable in large part to their freedom of action under local control and that proposed legislation should have most careful consideration from the professional and hospital point of view before it is offered to the Congress.

The American people find themselves today in the midst of a war which, this time, is in all truth a war for the salvation of democracy. Unless that war is won, such "social gains" as may have been secured will disappear along with the fundamental freedoms which prevail only under a democratic system of government. Those fundamental freedoms are more vital to the nation than any expansion of public services, or the engraftment on the body politic of new systems of payment for work, or improvement in the manner of living, or security developed by enforced savings through compulsory insurance. The American people are not averse to immense sacrifice—even to the ultimate sacrifice—if it will win the war. They should not be compelled, in the midst of such sacrifice, to consider radical proposals for changing the whole system of American living in health or in illness. The proposed expansions of the Social Security Act related to medical care should be considered in times when they can be given that type of deliberate, meticulous consideration which carefully weighs every aspect

of the problem concerned. Such proposals should not be submitted to the Congress and to the people in a period fraught with anxiety as to whether or not the nation itself will survive. Let us at the least postpone these proposals until the decision as to whether or not our democracy can successfully defend itself against ruthless totalitarianism is clear.

NIACIN AND NICOTINIC ACID

A poor name is a handicap to the promotion of a meritorious product. The name "nicotinic acid" for the vitamin so important in the prevention of pellagra has been doubly unfortunate. To the general public the word "nicotinic" implies too strongly the relationship of this vitamin to nicotine, the chief alkaloid of tobacco often used as an insecticide. The term "acid" denotes a corrosive substance such as the liquid used in automobile storage batteries. The vitamin called "nicotinic acid" was first produced in the laboratory in 1867 by the oxidation of nicotine with potassium chromate and sulfuric acid. Later the compound was named nicotinic acid because it had been made from nicotine and it had the ability to form salts. As a laboratory curiosity, which it remained for over seventy years, nicotinic acid was adequately named. From the point of view of those interested in furthering the distribution of foods enriched with this dietary essential, the name has proved unsuitable.

Following the anouncement of proposed regulations for enriched bread by the Food and Drug Administration, a well known trade publication announced the event with the heading "Tobacco in Your Bread" because nicotinic acid happened to be one of the dietary essentials which is added to the product. Although nicotinic acid was first produced from nicotine, and even now a small proportion of this substance is being produced commercially in this manner, the implication that tobacco is contained in enriched bread is far from true. Most of the nicotinic acid of commerce is produced by the oxidation of beta-methylpyridine, a coal tar derivative. Although nicotine is a toxic substance, nicotinic acid is a vitamin essential to life.

As reported elsewhere in this issue [1] a committee of the Food and Nutrition Board of the National Research Council has selected as suitable synonyms "niacin" for nicotinic acid and "niacin amide" for nicotinic acid amide. The Council on Foods and Nutrition has approved these synonyms for preparations that come within its scope. The choice of niacin appears to be a happy one. The name is not therapeutically suggestive. Although niacin is not altogether suitable from the purely chemical point of view, chemists and other scientists generally will continue to use the older terms, which to the initiated are unobjectionable. Whether the new names will overcome resistance to the greater use of enriched flour and enriched bread remains to be seen. They deserve to meet general approval.

1. Niacin and Niacin Amide, this issue, p. 819.

Current Comment

TSUNEYOSHI KOBA MEETS THE F. B. I.

The Baltimore *Sun* of February 17 reports the arrest of Tsuneyoshi Koba, celebrated medical impostor, by the Baltimore office of the Federal Bureau of Investigation. THE JOURNAL published an article concerning Koba, his various aliases and his various attendance at Johns Hopkins University School of Medicine in the issue of Nov. 16, 1940. A previous article concerning him appeared in THE JOURNAL, Aug. 1, 1931. Of particular interest was his claim at the time of his arrest that he was planning to make his residence in Baltimore once again and to seek employment as an intern at one of the Baltimore hospitals. He was taken into custody in an enemy alien roundup, on warrants charging him with failure to obtain permission to travel as a Japanese alien from St. Louis to Baltimore, failing to possess an alien registration card and falsely representing himself to be an American citizen while traveling under an assumed name. The new name, which is considerably different from the previous aliases—Koba, Kuba, Matuzaki and Matsuzaka—is Masami Iwataki Kanda. The news item referred to called attention to the various articles which have appeared in THE JOURNAL and stated that he had in his possession a portable radio with short wave receiving band, an expensive wig and face lotions for bleaching the skin among other things in his sixteen pieces of luggage. The item further stated that Koba had admitted to the federal agents many of the facts which were disclosed in THE JOURNAL articles. Possibly it did not occur to Koba of the many aliases that the Federal Bureau of Investigation would be interested in the facts disclosed about him in THE JOURNAL.

A NEW IDEA IN HEALTH EDUCATION

Health educators say that audiences are where you find them and that one needs merely speak in terms familiar to those one would reach and influence. Seldom are convictions in such tangible form as in the newly issued Nebraska Health Almanac.[1] This book resembles the old fashioned "patent medicine" almanacs. Interspersed with the other items are many relating to medical history, not only in the larger sense, but local to Nebraska. A two page spread is devoted to each month. On the left hand page is the calendar, with a special brief illustrated health suggestion. Beginning with January, these deal month by month with safety on Nebraska highways, whooping cough, typhoid, food and the teeth, safe water, the common cold, the home medicine cabinet, rabies, infantile paralysis, encephalitis, adequate diet and mental hygiene in the home. On the right hand pages are articles dealing with various phases of health and the work of the state health department in Nebraska. At the end of the volume are a few pages devoted to cancer, the school health program, athletics, venereal diseases, health of the eyes, and a year's summary of vital statistics. This almanac should make an effective instrument in health education.

1. Department of Health, State of Nebraska, Lincoln, 1942.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on Medical Preparedness of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession.

VENEREAL DISEASE CONTROL OFFICERS

The War Department announced on March 5 that specially qualified medical officers would be assigned to control and prevent the spread of venereal diseases among American troops. Supplementing the program already in effect, a venereal disease control officer with the grade of major will be assigned to each army camp of 20,000 or more men, each field army, air force and armored force, each corps area or department, each division, general headquarters and headquarters, communications zone. While the control measures employed by the Army in recent years have produced a satisfactory decline in disease rates and have been adequate for peace time, the change to a war time status introduces new conditions requiring additional control measures. The new control officers will function within the Army and with civil agencies, cooperating with other health agencies in stamping out possible sources of infection.

Within the military commands, measures to be taken to assure prompt and adequate control include:

1. Supervision, coordination and improvement of the venereal disease educational program.
2. Cooperation with other military agencies in order to provide an adequate recreational program.
3. Cooperation in the provision and maintenance of adequate facilities for prophylaxis.
4. The provision of adequate physical inspections of troops to detect early such cases as may cause failure to report at sick call.
5. The provision, standardization and supervision of facilities for the diagnosis and treatment of infected military personnel.
6. Close cooperation with local civilian health authorities to insure the reporting of probable civilian sources of infection which occur among soldiers in order to assist the civilian agencies in the elimination of foci of infection.
7. The collection and detailed analysis of data concerning the incidence and sources of infections acquired in the troops of the respective organizations.

In the civilian communities the control officers will cooperate with all agencies concerned in the control of venereal diseases to insure the effective repression of prostitution and the adequate quarantine and treatment of infected civilians, as a measure to prevent infection of soldiers. Cooperation will be carried out with the Bureau of Medicine and Surgery of the U. S. Navy, the Division of Social Protection and the Public Health Service of the Federal Security Agency, the Federal Bureau of Investigation, health and law enforcement agencies of states and smaller political units, and certain unofficial agencies such as the American Social Hygiene Association.

ARMY SPECIALIST CORPS FORMED

To marshal unusual scientific, technical, labor and business skills directly into the Army, the War Department announced the creation on February 27 of the new Army Specialist Corps, under an executive order signed by the President. Mr. Dwight F. Davis, Secretary of War from 1925 to 1929, will head the new corps. Since it will be necessary to form an organization and draft regulations, applications for service with the corps should be withheld pending further announcement.

The War Department plan provides that the Army Specialist Corps will establish, under military control and in distinctive uniform, a selected body of skilled individuals to supply all arms of the service and all echelons of the Army. The corps will consist mostly of uniformed civilians highly qualified in professional, labor and scientific fields but who do not necessarily have to possess military knowledge and training. It will place wherever needed, including the theaters of operations, men of exceptional skill in the many technical services necessary to a modern army. In other cases Specialist Corps members, experienced in the administrative field, will release Army officers from administrative posts so that they may take up the combat and command duties for which they are specially trained. Except in special cases, appointments will be made of men over the active draft age.

A feature of the corps will be the adaptability of the physical requirements for entrance to the particular assignment, so as not to bar especially qualified men from service. The members of the corps who are to serve with troops in the field will, of necessity, have to pass the same physical examination as members of the Army. The facilities of the Civil Service Commission, contacts with national organizations and the many applications already on file in the War Department will be available to the corps. In some cases it may be necessary to train selected personnel for particular positions. In general, the purpose is to gain the services of the best qualified civilians for each essential position.

COMMISSIONS IN ARMY RESERVE OPEN TO MEDICAL SCHOOL LOWER CLASSMEN

Provision for appointing physically qualified first and second year male students at approved medical schools, and bona fide accepted matriculants as well, as second lieutenants in the Medical Administrative Corps, Army of the United States, was announced on March 4 by the War Department. Officers appointed in this manner will not be called to active duty until they have completed their medical studies and internships and have qualified for appointment as first lieutenants in the Medical Corps. Previously only juniors and seniors in medical schools came under these provisions. The change broadens the base of procurement and assures the Army Medical Corps of a steady yearly increment of new officers for its reserve components.

Applications for commissions in this group are to be made through the dean of the medical school, who will forward the application and accompanying papers to the commanding general of the corps area in which the school is located. A certified statement that the applicant is a bona fide accepted matriculant in medicine at the institution is required.

Officers appointed under these provisions will be discharged for the convenience of the government if they discontinue their medical education, matriculate at an unapproved school of medicine, fail to complete successfully the prescribed four year course of medical instruction or fail appointment in the Army of the United States within one year after completion of the prescribed four year course of medical instruction. Students at approved schools of medicine, dentistry or veterinary medicine who already hold reserve commissions in other arms or services will not be ordered to active duty while completing their studies. Successful completion of their courses will qualify them for transfer as first lieutenants in the Medical Corps, Army of the United States.

INCREASE IN VENEREAL DISEASE IN ARMY

In his annual report to the Secretary of War, the surgeon general of the army, Major Gen. James C. Magee, is reported to have stated that the admission rate for all venereal disease for the whole army for the year ended June 30, 1941 was 42.5 per thousand strength in 1940, as compared to 29.6 in 1939. In explanation of the increase, the report stated in part that, although men enlisted and inducted are given a thorough physi-

cal examination, a number of cases are detected shortly after entrance into the service and these are cases which escaped detection or were still in the incubation period at the time of physical examination. The report stated also that discontinuance of the policy of trial by court martial of soldiers developing venereal disease after failing to take prophylaxis may have had something to do with the increased rate. The rapid expansion of the army and its concentration in many training camps was considered another factor. The report revealed that the death rate in the army, excluding battle casualties, was at its lowest rate in history during this period, with a death rate of 2.8 per thousand strength. The average number of medical personnel in military hospitals, however, increased from an average daily low of 4,753 in 1939 to 8,300 in 1940. There were 19,609 cases of influenza treated during the year, yet only 0.3 per cent developed into pneumonia. Automobile accidents was the principal cause of death in the army during that period.

PHYSICAL REHABILITATION OF REJECTED REGISTRANTS

National Headquarters, Selective Service System, has announced that tests of a physical rehabilitation program, intended to make many registrants who were rejected because of minor physical defects fit for active military service, have been authorized in Maryland and Virginia.

Authorization of the rehabilitation programs in the two states marks the beginning of a long-planned nationwide physical rehabilitation campaign. When the results of these pilot tests are evaluated, a date for the inauguration of the national program will be set. Only those registrants whose disabilities are certified by the Army as being remediable will be eligible to undergo treatment. As one of the first steps in the Maryland and Virginia test programs, the director of Selective Service of each state will submit to National Selective Service Headquarters lists of physicians and dentists qualified to correct physical defects of registrants. Physicians and dentists designated to render these authorized professional services will be paid by the federal government.

National Headquarters emphasized that any physician or dentist can apply to be designated to assist in the rehabilitation program. Physicians and dentists not already designated by registrants as their choice for dental or medical treatment, and other physicians and dentists who wish to take part in the program, may obtain the necessary application forms from their local boards.

GRADUATION AT CARLISLE BARRACKS

A class of three hundred and forty-four officers of the U. S. Army Medical Department graduated at the Medical Field Service School, Carlisle Barracks, Pa., February 28, following a two months course of instruction in military duties in the field, consisting of field demonstrations, lectures and home study in military art, sanitation, logistics, field medicine and administration. The members of the class, who left immediately after the ceremony to join their respective units, numbered two hundred and thirty-three officers of the medical corps, seventy-seven officers of the dental corps, twelve officers of the veterinary corps, sixteen of the medical administrative corps, four officers of the sanitary corps, one infantry officer and one field artillery officer. Two hundred and eighty-two of these officers were from the medical reserve corps, forty-one from the National Guard and twenty-one from the regular army. This was the tenth officers class to be graduated from this school recently; the eleventh officers' class will begin instructions on March 9.

Major Gen. James C. Magee, surgeon general of the army, in his address to the class, pointed out that the tempo is accelerating daily. All physician members of the class were graduates of accredited medical schools. He said that there is also urgent need for qualified technicians. The requirement for these enlisted specialists for an army of 3,600,000 will be about as follows: x-ray technicians, 6,044; laboratory technicians, 8,796; medical technicians, 47,870; surgical technicians, 34,681; sanitary technicians, 7,042; pharmacy technicians, 5,192, although equally important and highly trained specialists run into about the same figures. In addition to the foregoing, replacement training center facilities are available with a training capacity of 30,942 per cycle of training, including clerks, cooks, bakers, automobile mechanics, truck drivers and other basic specialists.

In regard to officer training, there is a great inadequacy to meet the combined needs for the treatment of sick and wounded incident to combat, in addition to the civilian needs of orthopedic surgeons, thoracic surgeons, neurosurgeons, maxillofacial surgeons and others. It is planned to set up specific training areas for the training of various types of specialists.

General Magee said that some members of this class will be assigned to such duties as the procurement, issue and storage of supplies and that today there is constructed or authorized 8,000,000 square feet of storage for medical depots, whereas in September 1940 the medical department was utilizing only about 1,203,000 square feet of floor space. The present medical department plans for procurement of supplies and equipment call for an expenditure forty to fifty times greater than that of 1939.

In July 1940, the army had about 17,950 hospital beds and on Feb. 1, 1942, the number had been increased to 80,000, and this it is expected will be greatly increased.

General Magee urged the graduates to put forth their most earnest effort and cooperation whatever their assignment in the pursuit of their everyday duties. War presents the opportunity to assemble a large body of physicians into a single cooperative effort, which is bound to be productive of great medical benefits. The medical profession, he said, will come out of this conflict enriched in knowledge, and the standards of the medical department of the army will be raised to a level even higher than those of the past, which are filled with valorous deeds and contributions to the general good of medical knowledge.

SELECTIVE SERVICE BOARDS AND PROCUREMENT AND ASSIGNMENT

Following publication of the description of the Procurement and Assignment Service for Physicians, Dentists and Veterinarians in THE JOURNAL, February 21, page 625, there seems to have been some misunderstanding among some physicians, dentists and veterinarians as to the exact relationship of the Procurement and Assignment Service to the Selective Service. Those in doubt should read again the memorandum signed by the Director of the Selective Service, Brig. Gen. Lewis B. Hershey, to all state directors of the Selective Service System on January 28. In that memorandum General Hershey said "When considering the classification of any registrant who is a qualified medical doctor, dentist or doctor of veterinary medicine, the Director of Selective Service desires that local boards, through the State Director, shall consult the Procurement and Assignment Committee of the Corps Area for information as to the availability of qualified medical doctors, dentists and doctors of veterinary medicine in the community. This information shall be considered by the local board in determining the registrant's classification. The executive order referred to [from the President] in no way affects the authority of the Selective Service System to classify registrants."

The professional groups concerned should again be reminded that the final authority to decide whether or not a physician, dentist or veterinarian is essential in his community in the profession which he occupies rests with the Selective Service board. From this decision a physician, dentist or veterinarian has, of course, the same right to appeal as would a person in any other occupation. The Procurement and Assignment Service through the corps area representative is authorized to supply verified information. The decision rests with the Selective Service board.

ORGANIZATION SECTION

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Changes in Status.—S. 1842 has been reported to the Senate with a recommendation that it pass, proposing to extend the benefits of the Soldiers' and Sailors' Civil Relief Act in connection with mortgages and instalment contracts to transactions originating subsequent to Oct. 17, 1940. Under existing law relief is provided by the act only with respect to such transactions as originated prior to the date named. S. 2208, a bill further to expedite the prosecution of the war, has passed the Senate and has been favorably reported to the House. This bill, among other things, proposes to make available the benefits of the U. S. Employees' Compensation Act to "any person in the protective services engaged in civilian defense, who has been duly appointed as such by an officer or agent of the United States acting under lawful authority." H. R. 6446 has passed the House and Senate, providing for continuation of payment of pay and allowances of personnel of the Navy, Marine Corps and Coast Guard, including the retired and reserve components thereof, and civilian employees of the Navy Department, during periods of absence from post of duty and for other purposes. This bill, among other things, provides for the postponement of the filing of federal income tax returns and the payment of federal income taxes by (*a*) any individual in the military or naval forces of the United States, (*b*) any civilian officer or employee of any department who is a prisoner of war and (*c*) any individual in the military or naval forces serving on sea duty or outside the continental United States.

Bills Introduced.—S. 2260, introduced by Senator Doxey, Mississippi, and H. R. 6606 and H. R. 6588, introduced by Representative Colmer, Mississippi, propose to strike from the Federal Food, Drug and Cosmetic Act the requirement that inspections of sea food may be made by the federal officials only when payment of certain inspection fees is made by the packer of the sea food. H. R. 6648, introduced by Representative Green, Florida, proposes that drugs shall be dispensed by the government of the United States, the government of the District of Columbia and the governments of the territories and possessions of the United States, including the Canal Zone, only under the direction of graduate registered pharmacists.

DISTRICT OF COLUMBIA

Change in Status.—S. 2154 has passed the Senate, proposing to amend the healing arts practice act of the District of Columbia by imposing a citizenship requirement on applicants for licenses to practice the healing art.

STATE MEDICAL LEGISLATION

Kentucky

Bill Introduced.—H. 356 proposes to authorize the state board of health to make such rules and regulations as may be necessary to control the actions of local boards of health when the members of such local boards fail to execute their duties under the health laws of the state.

Mississippi

Bills Introduced.—S. 274 proposes to authorize the board of trustees of state eleemosynary institutions to establish, equip, operate, support and maintain a state industrial institution and farm to be used as a place for the detention, direction, supervision, vocational training, care and education of any females convicted under the state, county or city laws against prostitution; and for the isolation and treatment of females afflicted with an infectious venereal disease. S. 277 proposes to create a board of trustees for hospitals to formulate and prescribe standards, rules and regulations for the operation, governing and licensing of hospitals in the state of Mississippi. The term hospital is defined as "any institution, hospital, sanitarium, infirmary or clinic organized and/or used for the prevention, diagnosis and treatment of physical, mental and medical ailments and where minor or major surgery is being done and where functional facilities may be available for training new workers in the many special professional, technical and economical fields relative to the discharge of its proper functions and which complies with the standards, rules and regulations" promulgated by the board of trustees for hospitals. The provisions of the proposed bill would not apply to offices or clinics in which only examinations, minor surgery and emergency surgery to the injured is being done and in which patients are kept for observation and for short periods of treatment; nor would they apply to any place used for the treatment of emergencies produced by war injuries, tornadoes, fires, floods or other catastrophes that may occur in the state. H. 394 proposes the establishment of three state charity hospitals and nurses' homes in the northern part of the state and provides for their control and management.

New York

Bills Introduced.—S. 871, to amend the public health law, proposes to authorize the department of health to designate as a special emergency health and sanitation area any area within the state which, because of the existence of any military or naval establishment, might produce unusual problems of health and sanitation; and to make and enforce rules and regulations for such area designed to obstruct and prevent the introduction of any contagious or infectious disease and to safeguard the public health. S. 879 and A. 1097, to amend the education law in relation to the practice of medicine, propose that nothing in the medical practice act shall prevent the practice of medicine by an intern while serving in a state hospital or that of a political subdivision of the state. S. 882 and A. 1117, to amend the domestic relations court act of the city of New York, propose to authorize that court to order each actual or alleged parent and the child to submit to one or more blood grouping tests by a duly qualified physician to determine whether or not any person disclaiming parenthood may be excluded as the parent of the child; and the results of such tests may be received in evidence but only in cases where definite exclusion is established. S. 888 and A. 469, to amend the law in relation to the establishment of adequate physical examinations and health service in vocational schools, propose that the board of education shall provide health service for pupils attending vocational schools. Such health service shall include "the necessary facilities to afford adequate physical examinations, including x-raying of the chest of all pupils in vocational high schools annually." No physical examination shall be required of any pupil who presents a health certificate on entrance to the school, and nothing in the proposed bill would affect the right of the parent or guardian to determine the form or manner of treatment or remedial care to be prescribed for such pupil. A. 994, to amend the law in relation to the disclosure of professional information, adds the professions of dentistry and pharmacy to the coverage of the existing law. A. 1058, to amend the labor law in relation to the manufacture of food products, proposes to prevent any person from working in a factory wherein a food product is manufactured who has a communicable or contagious disease which is transmittable through food, or who is suffering from any condition which may cause contamination of food. S. 950 and A. 1218, to amend the education law, propose that, with the exception of sales to the state, any of its political subdivisions or to hospitals or dispensaries, practicing physicians,

dentists or veterinarians, no manufacturer or wholesaler shall sell any poisonous, deleterious, and/or habit forming proprietary medicine unless it has registered in accordance with the provisions of the law. A. 1144, to amend the mental hygiene law, proposes to extend the scope of the act to include the mentally sick and proposes to add regulations for the commitment, custody, maintenance and discharge of such mentally sick persons. S. 1047 and A. 1155, to amend the workmen's compensation law, proposes to authorize podiatrists to render services under such law whenever the care required for an injury to an employee's foot is such that it may lawfully be treated by a duly registered and licensed podiatrist. Podiatrists would then be subject, so far as may be practicable, to the provisions of the labor law and the workmen's compensation law which apply to physicians relative to performance of necessary duties and relative to unprofessional conduct. A. 1212, to amend the hospital lien law, proposes a procedure for the determination and fixing by a court of the reasonableness of any lien filed by a hospital. S. 1098, to amend the workmen's compensation law, proposes to authorize duly licensed optometrists to render services to injured employees when the services to be rendered are of a nature which can lawfully be cared for by a duly registered and licensed optometrist in the state of New York. The bill also proposes to authorize the commissioner to prepare and establish a schedule of minimum charges and fees for such optometric treatment and care. S. 1054, to amend the insurance law, proposes to authorize hospital service corporations to supplement contracts for hospital service which they now write by adding the furnishing of indemnity against physicians' fees for surgical and obstetric care. A. 905 proposes to provide for the establishment and administration of a compulsory system of health insurance for the benefit of defined employees earning less than $1,500 a year. A. 1267, to amend the public health law, proposes to provide for reimbursement to any hospital of the state for emergency services rendered to a person who is unable to pay therefor.

Virginia

Bills Introduced.—H. 357, to amend the law relating to the duties of local health authorities, proposes to require a local authority to investigate and report any cases of certain specifically named communicable, contagious, infectious or dangerous diseases. H. 421, to amend the alcoholic beverage control act, proposes that alcoholic beverages may be sold only in drug stores, only for medicinal purposes and only on a physician's written prescription. S. 219, to amend the law relating to the sale of certain hypnotic drugs, proposes that the term "dangerous drug" shall include, in addition to those covered by the present law, the following: "Sulfanilamide (para-amino-benzene-sulfonamide), Sulfathiazole, Sulfapyridine, Sulfadiazine, Sulfaguanidine and any Sulfanilamide derivatives by whatsoever trade name or designation; or any related compound, preparation, mixture or salt thereof; or any salt or derivative thereof; or any preparation or mixture containing any of them." These drugs may be sold only on a physician's prescription, which may not be refilled.

MEDICAL ECONOMIC ABSTRACTS

PATIENTS IN HOSPITALS FOR MENTAL DISEASE

There were 395,683 patients in average daily residence in one hundred and seventy-eight state and two federal hospitals for mental disease in 1939. There has been an increase of 56.5 per cent in the number of patients since 1926. According to a special report of the Bureau of Census, January 31, this increase in population is due partly to "increased capacity of hospitals, to a growing awareness of the needs for early treatment, to an increase in population, to a lengthening average life span and shifting age distribution of the population resulting in greater exposure to the risk of hospitalization in those age groups in which the rate of prevalence of mental disease is highest, and to the demands that increased urbanization makes of the individual."

The American Psychiatric Association in 1926 set up certain standards for mental disease hospitals calling for an adequate medical staff with not less than one well qualified physician for every 150 patients and not less than one nurse for every 8 patients. "In the United States the patient load per assistant physician and medical intern was 245.2" says this report. "This is 60 per cent higher than the standard maximum. Many hospitals report patient-physician ratios several hundred per cent in excess of the maximum. Since adequate medical personnel is the first step in providing efficient treatment, it is evident that many patients are decidedly handicapped at the outset."

There were nearly sixteen state hospitals in which the rated capacity of the institution was exceeded by more than 15 per cent and overcrowding is "increasingly acute in some hospitals." The ratio of discharge in 1939 was 183.2 per hundred deaths as compared with the ratio of 126.5 in 1926. The one hundred and eighty state hospitals cared for 84 per cent of the total patients hospitalized for mental diseases. These hospitals expended $118,388,218 in maintenance in 1939 in addition to what was spent for capital outlay.

EXAMINATIONS FOR TUBERCULOSIS

The fact that need for a service does not create a desire was illustrated once more when the Detroit Department of Health had nurses canvass 196,000 persons in the low income group to offer them an opportunity to be examined for tuberculosis. Although arrangements were made to give the examinations without cost to those unable to pay for them, only about 17 per cent of the white population and 40 per cent of the Negro population reported for examination. In both populations the best response was obtained from the age group 5 to 14 years. This is not the age in which the greatest number of relative cases were found. The report of the study by Dr. G. E. Harmon in the February issue of the *American Journal of Public Health and the Nation's Health*, page 187, summed up the results as follows:

1. The response was greatest in the younger age groups, especially the 5 to 9 and 10 to 14 groups.
2. The Negro population responded more than twice as well as the white.
3. The age of greatest response was not the age of the highest tuberculosis case rates.

WOMAN'S AUXILIARY

Utah

The Woman's Auxiliary to the Salt Lake County Medical Society met at the Reception Center at Fort Douglas recently. The president, Mrs. Charles E. Brain, greeted the auxiliary members and also guests from out of town. She introduced Utah's only woman state senator, Mrs. E. E. Ericson. Col. H. P. Kyser explained the organization of the Reception Center and all the coordinating units. From 80 to 100 men are admitted daily and stay three to four days before being sent to training camps. The local boards report that 50 per cent are disqualified, mostly because of defective teeth. Luncheon was served in the mess hall to ninety-six members and guests, after which tours were conducted through the buildings by commissioned officers, who explained the organization in detail.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ARKANSAS

Officers of the State Board of Health.—Dr. Thomas Wilson, Wynne, has been elected president of the Arkansas State Board of Health; Dr. William G. Hodges, Malvern, vice president, and Dr. William B. Grayson, Little Rock, secretary, reelected.

CALIFORNIA

Rheumatic Fever a Reportable Disease.—The California State Department of Health recently added rheumatic fever to its list of reportable diseases, effective on January 1. According to *Western Public Health,* the department now has fifty diseases on its group for compulsory reporting.

Physician Members of Safety Council.—Three physicians were among the twelve new directors appointed to the California Safety Council recently, according to a report in *California and Western Medicine.* They are Drs. John C. Irwin, Los Angeles; Elliot A. Rouff, San Jose, and Charles A. Dukes, Oakland, formerly president of the California Medical Association.

Dr. Smyth Named Dean at California.—Dr. Francis S. Smyth, professor of pediatrics at the University of California Medical School, San Francisco, has been appointed dean of the school. Robert G. Sproul, LL.D., president of the university, has been acting dean of the school. The deanship has been vacant since the retirement on Dec. 31, 1939 of Dr. Langley Porter. Dr. Smyth graduated at California in 1922. Subsequently he served on the staffs of the Children's Hospital, Boston, New York Nursery and Childs Hospital, New York, and the St. Louis Children's Hospital, St. Louis. In 1932 he returned to the University of California. He is a member of the editorial board of the *American Journal of Diseases of Children.*

CONNECTICUT

Society News.—The New London County Medical Association was addressed in Norwich, January 8, by Dr. Frank H. Lahey, Boston, on "Lesions of the Esophagus, Stomach, Duodenum and Jejunum."——The Fairfield County Medical Association was addressed in Stamford in October by Dr. Eugene L. Swan, Brooklyn, on "Emotional Problems in Children."

New Unit at Neuro-Psychiatric Institute.—A new eight story science building is under construction at the Neuro-Psychiatric Institute of the Hartford Retreat, Hartford. Originally designed for scientific research exclusively, the building has been planned for emergency hospital expansion with between two and three hundred emergency beds with complete hospital facilities to supplement the emergency service of the nearby Hartford Hospital. The unit will contain technical laboratories for medical research in electroencephalography, cardiography, surgery, gynecology, eye, ear, nose and throat, neurology, endocrinology and orthopedics. The double second story will house the Jelliffe Library and the medical collection of the institute. Dr. Margaret A. Daley, Hartford, was recently added to the staff of the institute as a fellow in psychiatry.

ILLINOIS

Society News.—Dr. Ralph A. Kinsella, St. Louis, discussed "Virus Pneumonia" before the Madison County Medical Society in Highland, February 6.——Dr. Otto L. Bettag, Pontiac, addressed the Kankakee County Medical Society, Kankakee, January 13, on "The Differential Diagnosis of Chest Diseases."——Dr. Philip Lewin, Chicago, addressed the Peoria Medical Society in Peoria, February 3, on "Backache and Sciatica" and Dr. James S. Altman, Springfield, February 17, poliomyelitis.

Chicago

School for Tuberculosis.—The City of Chicago Municipal Tuberculosis Sanitarium has been conducting a postgraduate school of tuberculosis, consisting of three two hour sessions a week and running for about two months. The school aims to carry tuberculosis instruction directly to the physicians, and the sessions are held at some neighborhood location convenient of access for the particular group of physicians interested. The school awards a diploma to physicians showing more than 70 per cent attendance. Ninety-five Negro physicians graduated in the series conducted on the south side. Thirty physicians completed a recent course at the West Suburban Hospital, Oak Park, Ill. A complete history of tuberculosis is presented, covering the demonstration of bacilli, examination of slides and stressing the use of the x-rays. Members of the staff of the Municipal Tuberculosis Sanitarium are the instructors.

INDIANA

New Coroners Named.—Dr. Enoch E. Long, Shoals, has been made coroner of Martin County.——Dr. Colonel G. Mackey, Culver, has been appointed coroner of Marshall County to succeed Dr. Frederic G. Perry, Plymouth, who resigned to become health officer of the county.——Dr. Joshua L. Blaize, Vincennes, has been named coroner of Knox County.

Tribute to Dean of Pharmacy.—Purdue University, Lafayette, has published "A Book of Tributes to Charles Bernard Jordan," dean of the School of Pharmacy from 1924 until his death in April 1941. The book contains many tributes from colleagues and professional societies and carries a reproduction of the illuminated parchment presented to him in honor of his twenty-five years of service to the university. Dr. Jordan joined the Purdue staff in 1910 as head of the department of pharmacy and professor of pharmaceutical chemistry. Under his leadership, the department of pharmacy became a school in 1924 and he was named dean.

Immunization Survey of Children Under Ten Years of Age.—The Indiana State Board of Health has been conducting a statewide immunization survey to determine the number of children under 10 years of age in the state who have been given protective measures against smallpox and diphtheria. According to a preliminary report, 14,547 children in this age group were included in the survey. Of the 5,840 children under 6 years of age included in the total group, 19 per cent had diphtheria immunization and 9 per cent were vaccinated against smallpox. Only 34 per cent of the children in the group under 10 years had been immunized against diphtheria, and only 23 per cent had been given smallpox vaccinations. It is estimated that in Indiana there are about 600,000 children in this age group. So far the study emphasizes the need for more attention in the preschool age groups. Stress is placed on the fact that in 1940 about one third of all diphtheria deaths in the state were among children below 5 years of age.

KENTUCKY

District Meeting.—The Pulaski County Medical Society recently was host to a meeting in Somerset of the Sixth and Seventh district medical societies and to physicians of Barren, Bell, Knox, Whitley, Laurel and Madison counties. The speakers included:

Drs. Addie M. Lyon, director of the division of hospitals and mental hygiene, state department of welfare, Frankfort, Our Obligation to the Mentally Ill.
Dr. John E. Edwards, Lancaster, Use of the Various Members of the Vitamin B Complex.
Dr. Jennings B. Marshall, Louisville, Clinical Use of Stilbestrol.
Dr. William T. Maxson, Lexington, Vitamin K in the Prevention and Treatment of Hemorrhagic Disease of the Newborn.
Dr. Carl H. Fortune, Lexington, Sulfadiazine.

Changes in Health Officers.—Dr. Andrew B. Colley, Dixon, has succeeded Dr. George B. Davis as health officer in Grayson County. Dr. Colley will divide his time between Grayson and Hart counties with headquarters in Leitchfield, and Dr. Davis will move to Connecticut, it is reported.——Dr. Edwin Bruce Underwood has been placed in charge of the Webster County Health Department to succeed Dr. Colley.——Dr. John D. Fouts, London, health officer of Laurel County, has been appointed director of venereal disease control for the city of Louisville, and Dr. Leonard A. Crosby, Elkton, has been placed in charge of the health units in Lyon, Trigg and Caldwell counties.

MARYLAND

Symposium on Emergency Treatment.—The Baltimore City Medical Society devoted two meetings in February to a symposium on emergency treatment. The speakers, all of Baltimore, included:

Dr. Arthur M. Shipley, Immediate Treatment of Wounds, Especially Thoracic and Abdominal.
Dr. Robert W. Johnson Jr., Injuries to Bones, Joints and Muscles.
Dr. Edward A. Kitlowski, Burns.
Dr. Edward F. Lewison, captain, medical reserve corps, U. S. Army, Emergency Treatment of Chemical Warfare Casualties.

There were demonstrations of the use of splints, both ready made and improvised and of methods of transportation of the

wounded, as taught by the American Red Cross, and of methods of artificial respiration, both manual and mechanical, as used by the Baltimore City Fire Department.

MICHIGAN

Institute on Nutrition.—The Michigan Nutrition Defense Committee and the Michigan State College, East Lansing, sponsored a nutrition institute at the college, February 4. The speakers included:

Helen S. Mitchell, Ph.D., Washington, D. C., principal nutritionist, Office of Emergency Management, Office of Defense Health and Welfare Service, The National Nutrition Program.
Janice Smith, Ph.D., of the Ellen H. Richards Institute, Pennsylvania State College, Nutrition and the Nation's Fitness.
Marie Dye, Ph.D., dean of division of home economics, professor of foods and nutrition, Michigan State College, The Michigan Nutrition Program.

There was a round table on "nutrition in action" and a food demonstration on "Meat in the National Nutrition Program." A coordinating committee has been appointed by the governor to relate the work of the Michigan Nutrition Defense Committee with that of the Michigan Council of Defense. There are six members on the new committee, which is to be known as the Michigan Nutrition Committee.

MINNESOTA

Personal.—The University of Minnesota and the University of Minnesota Press, Minneapolis, recently held a reception in honor of members of the Mayo family and Helen B. Clapesattle, author of "Doctors Mayo."——Dr. Charles E. Caine has been named mayor of Morris.——John E. Anderson, Ph.D., professor and director, Institute of Child Welfare, University of Minnesota, Minneapolis, has been appointed chairman of the Minnesota committee of the White House Conference on Children in a Democracy.

Abortionist Convicted.—Fred Wells, Buffalo Lake, was found guilty by a jury in the district court of Renville County, December 12, having been charged with the crime of abortion. Judge Harold Baker sentenced Wells to a term of not to exceed two years of hard labor at the state prison at Stillwater. Before his trial, Wells had pleaded not guilty to the charge. Wells, who for more than twenty-five years had been a rural mail carrier, had no medical education of any kind. Evidence was offered to show that Wells had performed a previous operation on the same girl. The defendant admitted that he had completed only the fifth grade in school.

Grants to the University of Minnesota. — *Minnesota Medicine* announces the following recent gifts to the University of Minnesota, Minneapolis: $7,000 from the Citizens' Aid Society to support research on gastric ulcer under Dr. Owen H. Wangensteen, professor and head of the department of surgery at the medical school, to be used over a two year period; $4,700 from the National Research Council for research on fat metabolism; $2,500 from the National Confectioners Association for use by Ancel Keys, Ph.D., professor of physiology, in his study on diet and fatigue; $2,000 from the John and Mary R. Markle Foundation, New York, as a supplementary grant to support the work of Dr. Albert V. Stoesser, associate professor of pediatrics, on water-electrolyte metabolism in intractable asthma; $1,200 from the W. H. Barber Company for the Ivar Sivertsen Foundation for cancer research, and $1,000 from an anonymous donor through the Minnesota Medical Foundation to establish a research problem in the division of internal medicine.

MISSISSIPPI

Personal.—At a recent meeting, the Central Medical Society paid special tribute to Dr. Harvey F. Garrison, Jackson, who recently was named president-elect of the Southern Medical Association. Dr. Seale Harris, Birmingham, Ala., was the guest speaker on "The Food Factor in Winning the War and the Physician's Responsibility."

Society News.—The East Mississippi Medical Society was addressed recently in the Lamar Hotel, Meridian, by the following members of the University of Tennessee College of Medicine, Memphis, Tenn.: Drs. William L. Simpson, "Throat Infections as Seen by the General Practitioner"; Arthur G. Jacobs, "Nutritional Deficiencies of Infancy and Childhood," and James M. Bethea and Charles H. Avent, who discussed the gallbladder from the standpoint of the internist and surgeon, respectively.

MISSOURI

Personal.—Dr. Ira H. Lockwood, Kansas City, has been appointed a member of the state board of health, succeeding Dr. Howard B. Goodrich, Hannibal.——Dr. Hal Foster, Kansas City, who was the second secretary of the Jackson County Medical Society, and first secretary of All Saints' Hospital, now St. Luke's, has given his collection of books to the Jackson County Medical Society, following his retirement after sixty years in the practice of medicine.

Society News.—Dr. Drew W. Luten discussed "The Favorable Prognosis of Coronary Disease" before the St. Louis Medical Society, February 3, and Dr. Oswald P. J. Falk, "Management of Acute Coronary Occlusion Favoring Recovery." Both are from St. Louis.——Dr. Eugene A. Miller, St. Joseph, discussed "Relation of Diet to Ophthalmology and Otolaryngology" before the Buchanan County Medical Society in St. Joseph, January 31.——Dr. Walter J. Siebert, St. Louis, discussed "Death and Revivescence with Experimental Human Studies" before the Kansas City Academy of Medicine, January 17.

Illegal Practitioner Sentenced.—Samuel Schmidtberger, operating the Medical Health Clinic in Kansas City, was recently sentenced to five years imprisonment and fined $1,000 each on the eleven counts of the indictment which charged him with illegal narcotic sales. Schmidtberger had practiced about eleven years in Kansas City and in recent years had a licensed physician, the late Dr. Edward Lindsay Mize, as an assistant. Dr. Mize died during the Schmidtberger trial. According to a report from the United States Attorney in Kansas City, Schmidtberger has been in various kinds of trouble since about 1912 and has been a fugitive from justice from California since 1924. He was "driven out of Old Mexico," it is reported, where he had appeared as a doctor under the name "Samuel Schmidtberger." Official correspondence in regard to this case refers to him as a "dangerous charlatan posing as a doctor of medicine."

NEW JERSEY

Society News. — Dr. Joseph T. Beardwood Jr., Philadelphia, discussed "Newer Concepts of Diabetes Mellitus" before the Medical Society of Atlantic County in Atlantic City, February 13. —— Dr. Richard A. Kern, Philadelphia, discussed "Clinical Allergy" before the Academy of Medicine of Northern New Jersey, February 19. Dr. Newell C. Gilbert, Chicago, discussed "Factors Influencing the Coronary Flow" before the society section on medicine and pediatrics, February 10.

Tuition Waived for Military Men in Course in Amputations.—The New York University College of Medicine, New York, announces that customary tuition for the postgraduate course in amputations will be waived in the case of qualified military and naval medical officers. The course will be given by Dr. Henry Howard Kessler, lieutenant commander, U. S. Naval Reserve, at the Newark City Hospital and the New Jersey Rehabilitation Clinic of Newark. The work will open on March 14 and continue through April 25. Additional information may be obtained from the dean of New York University College of Medicine, 477 First Avenue, New York.

NEW YORK

Health Officer Honored.—Dr. Samuel W. S. Toms, health officer of South Nyack, Rockland County, was guest of honor at a reception and dinner recently in Nyack, given by the Rockland County Medical Society in observance of his eightieth birthday and the completion last spring of fifty years in the practice of medicine. Dr. Toms graduated at the University of Buffalo School of Medicine in 1891. He served as health officer of South Nyack from 1899 to 1902 and again after 1930. He is the third member of the county medical society to have completed fifty years of practice and is one of the two remaining members of the first medical and surgical staff of the Nyack Hospital. Dr. Toms was presented with a scroll bearing a sketch of the bronze tablet which is to be erected in the hospital in his honor.

Graduate Lectures. — The state medical society and the state department of health recently cooperated in Watertown on a graduate course on sulfonamide therapy for the Jefferson County Medical Society. The speakers were:

Dr. Alexander D. Langmuir, Peekskill, Behavior of Sulfonamides in the Body and Principles for Their Use, January 27.
Dr. Leon E. Sutton, Syracuse, Local and Internal Use of Sulfonamides in Surgery, January 27.
Dr. Allister M. McLellan, New York, Treatment of Genitourinary Infections in the Male, February 12.
Dr. Edward C. Hughes, Syracuse, Sulfonamides in Obstetrics and Gynecology, February 12.
Dr. Clayton W. Greene, Buffalo, Treatment of Pneumonia, February 24.
Dr. Harry Bakwin, New York, Treatment of Meningitis, February 24.

One lecture was arranged for the annual staff meeting of the Mercy and Auburn City hospitals in Auburn, January 27. Dr.

Ralph Gregg of the U. S. Public Health Service, New York, discussed "Activities of the U. S. Public Health Service, with Special Reference to National Defense."

New York City

First Mary Swartz Rose Lecture.—Conrad A. Elvehjem, Ph.D., professor of agricultural chemistry, University of Wisconsin, Madison, delivered the first Mary Swartz Rose Memorial Lecture at the New York Academy of Medicine on February 3. His subject was "Natural Foods in the American Dietary." The lecture was sponsored by the Greater New York Dietetic Association in memory of the late Mary Swartz Rose, Ph.D., professor of nutrition at Teachers College, Columbia University, who died Feb. 1, 1941.

Society News.—Dr. Shields Warren, Boston, discussed "Tissue Changes Following Irradiation" before the New York Roentgen Society, December 15.——Dr. Edwin C. Hamblen, Durham, N. C., addressed the Medical Society of the County of Kings and the Academy of Medicine of Brooklyn recently on "Some Observations on the Diagnosis and Treatment of Functional Disorders of the Pituitary and Ovaries."——Dr. Frank H. Lahey, Boston, discussed "Newer Developments in Surgery" before the Medical Society of the County of Queens on January 27.

Symposium on Syphilis.—A symposium on syphilis and dermatology was held under the auspices of the Long Island College of Medicine, the Bureau of Social Hygiene and the Red Hook-Gowanus Health Center of the department of health, February 6. The speakers included:

Dr. Moses Silverman, Cutaneous Manifestations of Syphilis.
Dr. Lewis D. Stevenson, Neurosyphilis: Some Clinical and Pathological Aspects.
Dr. Thurman B. Givan, Brooklyn, Interstitial Keratitis.
Dr. Anthony C. Cipollaro, Use of Physical Therapy in Dermatology.
Dr. Howard Fox, Diseases of the Skin Due to Animal Parasites.
Dr. Marion B. Sulzberger, Eczema and Its Treatment.

New Director of Child Hygiene.—Dr. Leona Baumgartner has been appointed director of the bureau of child hygiene of the city department of health, having placed first on the list in the recent civil service examination. Dr. Baumgartner, who has been acting director of the bureau since Jan. 1, 1941, was born in Chicago and graduated at Yale University School of Medicine in 1934. She joined the health department in 1937 as medical instructor in child and school hygiene, and in 1938 was director of public health training. In 1939 Dr. Baumgartner passed a civil service examination for district health officer and was assigned to the Kips Bay-Yorkville Health and Teaching Center and in her capacity as health officer served as assistant professor in pediatrics and public health at Cornell University Medical College.

Dr. Oppenheimer Honored.—Dr. Bernard Sutro Oppenheimer, clinical professor of medicine at Columbia University College of Physicians and Surgeons, was presented with a volume of one hundred and six papers at a ceremony in Mount Sinai Hospital, February 10. The volume was compiled especially to honor Dr. Oppenheimer on his sixty-fifth birthday, which he observed June 20, 1941. The gift represents the contributions of one hundred and fifty-nine physicians and twenty-nine laymen, including Governor Herbert H. Lehman. Dr. Oppenheimer graduated at the College of Physicians and Surgeons of Columbia University in 1901. He served overseas in the World War and has the rank of colonel. He was in the medical reserve corps until 1934. According to a release from Mount Sinai Hospital, Dr. Oppenheimer has been associated there for thirty-seven years.

Eightieth Birthday of Dr. Max Einhorn.—The New New York chapter of the National Gastroenterological Association held a special meeting on January 19 to mark the eightieth birthday of Dr. Max Einhorn, emeritus professor of medicine, New York Post-Graduate Medical School, Columbia University. The Rudolf Virchow Medical Society observed his birthday on January 5. Dr. Einhorn was given a testimonial dinner on January 10 by the staff of the Lenox Hill Hospital, with which he has been associated for more than fifty years. Dr. Einhorn was born in Grodno, Russia, on Jan. 10, 1862 and received his medical degree at the University of Berlin, where he studied from 1880 to 1884. He was affiliated with the New York Post-Graduate Medical School since 1896. He was chairman of the American Committee of the International Congress of Gastroenterology in 1935 and once served as president of the American Gastroenterological Association.

OHIO

Personal.—Dr. Addison L. Kefauver, Columbus, has been appointed acting supervisor of the medical section of the Ohio State Industrial Commission. Dr. Henry P. Worstell, Columbus, who has gone on active duty in the navy medical corps, has been given an indefinite leave of absence as supervisor.——Dr. Isaac P. Seiler, Piketon, was recently reelected mayor.

Professor of Pediatrics at Cincinnati.—Dr. Alexander A. Weech, associate professor of pediatrics, Columbia University College of Physicians and Surgeons, New York, has been appointed professor of pediatrics at the University of Cincinnati College of Medicine, Cincinnati, to succeed the late Dr. Albert Graeme Mitchell. A native of Baltimore, Dr. Weech graduated at Johns Hopkins University School of Medicine in 1921, subsequently serving for some years on the faculty. From 1928 to 1930 he was in charge of the division of pediatrics at Peiping Union Medical College, Peking, China. He joined the staff of Columbia University College of Physicians and Surgeons as assistant professor of diseases of children, becoming associate professor in 1932.

Physicians Must Sign Fee Bill on Workmen's Compensation.—Effective on March 1 a fee bill for treatment rendered a claimant of the state industrial commission must be signed by the physician who renders the treatment or a physician who actually sees and examines the patient and directly supervises treatment, according to a resolution adopted by the commission on Dec. 19, 1941. The signature must be in the physician's handwriting and be duplicated underneath in legible printing or typewriting. The resolution, which was approved by the committee on workmen's compensation and the council of the Ohio State Medical Association, was formulated to give the industrial commission more authority with respect to curbing certain abuses, primarily the one whereby some physicians have been signing medical reports and presenting fee bills for services rendered by assistants under circumstances in which the services were not directly supervised by the physicians submitting the reports and fee bills, or in which, according to the state medical journal, the patient was not seen or examined at any time by such physician.

PENNSYLVANIA

Society News.—Dr. Jonathan E. Rhoads, Philadelphia, discussed "Use of Sulfonamides in Surgery" before the Lebanon County Medical Society in Lebanon, February 10.——Dr. Hans May, Philadelphia, addressed the Lycoming County Medical Society in Williamsport, February 13, on "Plastic and Reconstructive Surgery."——Dr. Sydney J. Hawley, Danville, discussed "Minor Uses of Roentgen Ray in Treatment" before the Montour County Medical Society in Danville, February 20.——Dr. Chester S. Keefer, Boston, addressed the Blair County Medical Society in Altoona, January 27, on "Treatment of Infectious Diseases Common in War Times."——The Cambria County Medical Society was addressed in Johnstown, February 12, by Dr. Harold W. Jones, Philadelphia, on "Transfusion of Blood Plasma and Other Blood Substitutes."

Philadelphia

Special Lectures at College of Physicians.—David Bruce Dill, Ph.D., director of the fatigue laboratory, Harvard University, Boston, and Dr. Arlie V. Bock, Henry K. Oliver professor of hygiene, Harvard University, Cambridge, Mass., will deliver the James M. Anders Lecture before the College of Physicians of Philadelphia, April 1. Their subject will be "Fatigue." René J. Dubos, Ph.D., of the Rockefeller Institute for Medical Research, New York, delivered a Mary Scott Newbold Lecture before the college, March 4, on "Origin, Nature and Properties of Gramicidin." Dr. Francis R. Packard, Philadelphia, gave a public lecture January 16 under the auspices of the college on "The Diagnosis of Diseases of the Lungs and Heart; Stethoscope to X-Ray." Clive M. McCay, Ph.D., professor of nutrition, Cornell University, Ithaca, N. Y., delivered the twenty-sixth Nathan Hatfield Lecture before the college, February 4. His subject was "Nutrition, Aging and Longevity."

VIRGINIA

Personal.—Dr. John Shelton Horsley, Richmond, has been appointed a member of the state hospital board for a term ending June 30, 1943. Dr. Robert Finley Gayle Jr., Richmond, whose term expired June 30, 1939, had been serving until a new appointment was made.

State Journal to Publish Laws.—One issue of *Virginia Medical Monthly* will be devoted to the publication of all laws pertaining to the practice of medicine in the state, in accordance with action of the council of the state medical society at its meeting on January 8 in Richmond. The idea emanated from the publication of the "Blue Book" of Wisconsin, published by the *Wisconsin Medical Journal*. A lawyer will be employed to correlate the material.

WASHINGTON

Physician Honored.—The Children's Orthopedic Hospital, Seattle, has dedicated its third floor as the "Sharples Surgical Division" in honor of Dr. Caspar W. Sharples, who has been affiliated with the hospital for thirty-four years. Dr. Sharples is consultant on the general surgery staff. A tablet and portrait at the entrance of the hospital are a tribute to his service.

Society News.—Reno Odlin, Tacoma, president of the Puget Sound National Bank, discussed "Our Economic Future" before the Pierce County Medical Society, Tacoma, February 10, and Dr. Charles P. Larson, Tacoma, "Forensic Medicine." Dr. Warren C. Hunter, Portland, discussed "A Clinical and Pathological Consideration of Thrombosis of the Deep Veins of the Leg and Pulmonary Embolism" at the February 24 meeting, and Dr. Harry B. Allison, Tacoma, presented a case report. Dr. Garnett Cheney, San Francisco, addressed a special meeting of the King County Medical Society recently on "Vitamin U and Peptic Ulcer."——Dr. Edward D. Hoedemaker, Seattle, addressed the Walla Walla Valley Medical Society in Walla Walla, January 8, on "The Psychologic Aspects of Injury in General and to the Head, and the Sequelae and Treatment."

WISCONSIN

State Heart Meeting.—At the recent annual meeting, the Wisconsin Heart Association adopted by-laws for the association and elected the following officers: Drs. Alvin G. Koehler, Oshkosh, president; Maurice A. F. Hardgrove, Milwaukee, vice president, and Raymond F. Wagner, Oshkosh, secretary-treasurer.

Personal.—Dr. Edward D. Hudson has been appointed health officer of Lake Geneva to succeed Dr. Lawrence H. Donath, who resigned to transfer his medical practice to Milwaukee.——Dr. Rogers E. Garrison, Wisconsin Rapids, has been appointed coroner of Wood County, filling the unexpired term of Dr. Patrick E. Wright, Wisconsin Rapids, who resigned after holding the position seven years.

Dr. Newberry Goes to Farm Security Administration.—Dr. Charles L. Newberry, Milwaukee, has been appointed senior medical officer in the medical service division of the Farm Security Administration, according to the *Milwaukee Medical Times*. He will be stationed at Upper Darby, Pa., and will have jurisdiction over rural areas in New England, New York, Pennsylvania, Delaware, Maryland and New Jersey. Dr. Newberry graduated at Marquette University School of Medicine, Milwaukee, in 1926.

WYOMING

Sixth Typhoid Carrier Found.—*Western Public Health* reports that the sixth typhoid carrier was found recently in Wyoming since a case finding program was started more than a year ago. The carrier was a nurse, the mother of three sons, all of whom have had the disease. She gave a history of having had typhoid in 1917.

Society News.—The Laramie County Medical Society devoted its meeting in Cheyenne, January 24, to a program on medical preparedness with the following speakers, among others: Dr. Roscoe H. Reeve, Casper, "Wyoming Physicians in the Defense Program"; Dr. Paul W. Emerson, Cheyenne, "Food Problems on the Home Front"; "Causes of Rejection in Wyoming Selectees," and Dr. John W. Amesse, Denver, "Medical Problems in Defense Preparedness." Nels H. Smith, Cheyenne, governor of the state, and Ed Warren, Cheyenne, mayor of Cheyenne, gave the introduction.

GENERAL

Postgraduate Psychiatric Education.—The American Psychiatric Association will hold its fifth institute on postgraduate psychiatric education for state hospitals at the Missouri State Hospital, St. Joseph, March 23-April 4.

Bulletin on Infantile Paralysis Activities.—The National Foundation for Infantile Paralysis recently began the publication of the *National Foundation News*. The bulletin is to be the medium for the exchange of ideas on problems common to the chapters. It will also carry news of their various activities.

Regional Pediatric Meeting Postponed.—Because of existing conditions the 1942 meeting of region IV of the American Academy of Pediatrics has been postponed until the United States and our allies have won the war. It is planned that the first postwar meeting of region IV will be held in Los Angeles.

Assembly of Women's Field Army Abandoned.—Plans to hold a national assembly of the Women's Field Army in 1942 were canceled at a meeting of the board of directors of the American Society for the Control of Cancer in December. Instead, a series of local conferences will be held. The action was taken in view of the national emergency.

Wholesale Druggists' Association Indicted.—The U. S. Department of Justice announced on February 6 that a federal grand jury sitting at Newark, N. J., had returned an indictment charging the National Wholesale Druggists' Association, twenty-three of its members and twenty-nine officers and agents with conspiracy to violate the Sherman Act by fixing wholesalers' margins of profit on drug products. The National Wholesale Druggists' Association constitutes the largest group of drug wholesalers in the nation, doing about 80 per cent of the wholesale drug business in the United States. Twenty-three out of a total association membership of two hundred and eleven were indicted. Sixty-four of the two hundred and eleven wholesalers are branches of the defendant McKesson & Robbins, Inc. Those indicted handle a full line of drug products and provide various services in connection with sales to retail druggists.

Another Fraudulent Salesman.—A man giving his name as F. S. Antrim has been calling on physicians claiming to be a representative of the Intra Products Company of Denver. He has been accepting checks for orders payable to the Intra Products Company, endorsing and then cashing them. A letter from the Intra Products Company states that this man has never been in the employ of the company but mentions that he is said to be an ex-convict with a record in Salt Lake City, Denver and St. Louis. The company has been notified of his irregular activities in Illinois, Missouri and Indiana. A description received from one physician, who had been defrauded, states that "Antrim" is about 50 years old, about 5 feet 6 inches tall, with dark hair graying at the temples and weighing around 150 pounds. This physician intends to prosecute the man and urges any one learning of his whereabouts to notify the Missouri state police.

Change in Status of Licensure—Dr. Stammer Exonerated.—In THE JOURNAL, Oct. 12, 1940, page 1290, under "Changes in Status of Licensure," it was reported that the New York State Board of Medical Examiners on July 19 had suspended the license of Dr. Emanuel L. Stammer of Jamaica for one year. Sidney Paymer, counselor at law who represented Dr. Stammer, now states that Dr. Stammer was exonerated by the Appellate Division of the Supreme Court of the State of New York and also by a five to two decision of the Court of Appeals of the State of New York. Mr. Paymer writes that in the opinion of the Appellate Division there was no evidence of any fraud and deceit on the part of Dr. Stammer, nor in its opinion was there anything to justify a suspension of his license. This opinion was affirmed by the Court of Appeals, which also wrote an opinion stating that there was no fraud and deceit practiced by Dr. Stammer nor did he in any way violate the statutes of the state of New York.

Association for the Advancement of Science.—The nineteenth annual Thousand Dollar Prize of the American Association for the Advancement of Science was given to Dugald E. S. Brown, Ph.D., assistant professor of physiology, and Douglas A. Marsland, Ph.D., assistant professor of biology, New York University, New York, and Frank H. Johnson, Ph.D., instructor in biology, Princeton University, Princeton, N. J., for their joint papers on the following subjects: "The Reversible Denaturation of Enzymes as a Determining Factor in the Reaction of Biological Systems to Temperature and Pressure" and "Mechanism of Temperature and Hydrostatic Pressure Reversal of Narcosis in Luminous Bacteria." Dr. Brown received his Ph.D. degree at Cornell University in 1933. Dr. Marsland took his Ph.D. degree at New York University in 1934. Dr. Johnson received his Ph.D. at Princeton University in 1936 and his A.M. at Duke University in 1932. The award was presented during the recent annual meeting of the American Association for the Advancement of Science in Dallas.

LATIN AMERICA

Hospital News.—The Faculty of Medicine of the Catholic University of Chile, Santiago, recently opened a hospital with a capacity of two hundred beds. Eighteen physicians are on the staff.

Portuguese Language for Brazilian Press.—A law was recently promulgated making it mandatory for all journals and papers of Brazil to be written in Portuguese and forbidding the further publication in foreign languages. According to

Brasil-Medico, the law aims to enforce national unity and national defense. It was issued by President Getulio Vargas of Brazil through the National Council of the Press.

Argentine Chapter on Gastroenterology Formed.—According to the *Review of Gastroenterology*, an Argentine chapter of the National Gastroenterological Association has been organized. Dr. Carlos Bonorino Udaondo, honorary professor of the University of Buenos Aires and director of the National Institute for Diseases of the Digestive System of Buenos Aires, has been chosen the first president. Other officers include Dr. José Oviedo Bustos, gastroenterologist of the University of Rosario, vice president; Dr. Pedro A. Maissa, adjunct professor of radiology of the University of Buenos Aires, secretary, and Dr. Guillermo P. Gonalones, director of the experimental laboratory of the National Institute for Diseases of the Digestive System, treasurer.

CORRECTIONS

Francis Carter Wood.—In the medicolegal abstracts in THE JOURNAL, February 14, page 557, in the seventh line from the bottom, the name Dr. Francis Ward should have been Dr. Francis Carter Wood. The legal publication from which this abstract was made gave the name incorrectly.

Discussion on Surgical Approach to Hypertension.—Following the paper by de Takats, Heyer and Keeton in THE JOURNAL, February 14, page 501, is a discussion credited to Dr. Claude Beck of Cleveland. Dr. Beck writes that Dr. Peter Heinbecker of St. Louis wrote this discussion and in his absence Dr. Beck read it before the meeting.

Government Services

Changes in Division of Vital Statistics

Dr. John Collinson Jr., since 1935 assistant chief statistician for vital statistics, U. S. Bureau of the Census, has resigned to become deputy state health officer of Maryland. Dr. Collinson before joining the Bureau of the Census had been associated with the Maryand State Department of Health for nineteen years. Forrest E. Linder, Ph.D., has been appointed assistant chief statistician for vital statistics to succeed Dr. Collinson.

Dr. Badger Named Assistant Director of National Institute

Dr. Lucius F. Badger, surgeon, U. S. Public Health Service, Washington, D. C., has been assigned as assistant director of the National Institute of Health, Bethesda, Md. Dr. Badger graduated at the University of Minnesota Medical School, Minneapolis, in 1921. For a time after joining the U. S. Public Health Service he was director of the U. S. Leprosy Investigation Station at Honolulu, Hawaii, and has written a number of articles on leprosy, typhus, Rocky Mountain spotted fever and psittacosis.

Knopf Collection Given to Army Library

The medical library of the late Dr. Sigard Adolphus Knopf, New York, has been given to the Army Medical Library, Washington, D. C. In addition to this collection of more than twelve hundred books, the gift includes a compilation of about five hundred published writings of Dr. Knopf, which is to be kept in the archives of the army library, and a group of one thousand duplicates which will be available for loan and distribution. There are included also portraits of many medical men, letters of Osler and Welch and other famous physicians, and diplomas of various kinds. Other prized collections of Dr. Knopf have been distributed by Mrs. Knopf. A group of photographs of past presidents and vice presidents of the National Tuberculosis Association and letters has been given to the association. The material on three inventions, his instruments and many photographs and letters have been given to the New York Academy of Medicine for its medical museum. His office furniture was given to the Post-Graduate Medical School, where he was a member of the staff for many years, and to the Sea View Hospital for use by the physician in chief.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Jan. 17, 1942.

The Increase in Tuberculosis

As stated in a previous letter, although the general health of the population remains good and indeed the figures show some improvement on the prewar ones, a slight increase in tuberculosis has been observed. A similar increase occurred in the last great war. Curiously, the increase has been most noticeable in women between the ages of 15 and 25. The death rate per million from pulmonary tuberculosis in this group rose from 702 in 1939 to 881 in 1940, while the death rate at all ages rose from 535 to 587. More recent figures for the first quarter of 1941 show a slight improvement compared with the corresponding quarter of 1940. At the invitation of the minister of health, the Medical Research Council has arranged for an immediate inquiry into the cause of the increase. The minister is so concerned that he has already sent a circular to the local health authorities to take steps in the matter.

He points out that arrangements for the care and after-care of the tuberculous are an essential adjunct to the treatment service. The problem of sufficient beds for residential treatment has been a difficulty in some districts. If any authority is in need of more beds, the health officer should take up the matter with the principal regional medical officer. In many districts the difficulty is more in providing nurses than in accommodation. Steps have been taken to induce more women to train for tuberculosis nursing.

Precautions Against Louse Borne Typhus Fever

The existence of louse borne typhus fever in Europe and northern Africa has led the Ministry of Health to take precautions in case the disease reaches this country through refugees, prisoners of war or returning travelers. A memorandum on the disease has been issued to health officers and superintendents of isolation hospitals. The vaccine, made by using the yolk sac of the developing chick embryo as a medium, is available only for the teams engaged in combating the disease. Every case must be reported to the local health officer and by him at once to the Ministry of Health. The principal towns have been asked to organize teams of medical officers, nurses and sanitary inspectors and ambulance drivers for dealing with an outbreak. These will be provided with specially made protective clothing and offered preventive inoculation. Because of the difficulty of diagnosis, experts will be available for consultation. A mobile team, the Harvard Field Hospital now working in England, will also be available for assistance in diagnosis. On the admission of a patient to a hospital, precautions must be taken against any of the staff contracting the disease. The patient must be taken to a special bathroom, stripped, deloused and clad in hospital garments. This will involve cutting of the hair, shaving and thorough soaping all over.

Psychiatric Clinic at Guy's Hospital

There are plenty of psychiatrists in this country and not a few psychiatric clinics but none at our general teaching hospitals. Such things—even the word psychiatry—were unknown when even the most recent of our general hospitals were established, and we are by nature a conservative people. But at last the building has been completèd of the first psychiatric clinic to be erected in this country as part of a general teaching hospital. This is called the York Clinic and has been erected at our most famous teaching hospital, Guy's Hospital. Its open-

ing has had to be deferred until the end of the war. Its completion at this time, when so much damage has been done to London and even to Guy's Hospital itself in the attempt of the new barbarism to subjugate and enslave Europe, is one more example of the calmness and confidence of our people, who, if possible, do not allow their normal activities to be interrupted by the war. But for fifty years Guy's had had a lecturer in psychologic medicine, and more than two hundred years ago the bookseller who founded it provided in his will for the care of 40 chronically insane patients in the ward of the hospital. Later the funds available for this purpose were transferred to Bethlem hospital, which is devoted to mental disease. Such places used to be called "lunatic asylums," a term which reflected the hopeless attitude then general as to mental illness. But the new clinic reflects the developments of psychiatric science which have since taken place. Functional mental disorders or psychoneuroses have been found to result from mental stress and to need and respond to early treatment.

The York Clinic is constructed for the treatment of psychoneuroses severe enough to require inpatient treatment and of psychoses. The purpose of having it within the precincts of a general hospital are to encourage early treatment and to facilitate teaching of psychologic medicine. The building contains forty-five beds and has five floors. In the basement are the laboratory, gymnasium and dining room. The roof is a recreation space. The building has been made as far as possible a place where patients can live without being confined to bed. Most of the accommodation is in single rooms, but there are some three bed dormitories.

Soldiers in Armor

As reported in a previous letter, an important discussion took place at the Section of Surgery of the Royal Society of Medicine on protection of the soldier in warfare (THE JOURNAL, Aug. 24, 1940, p. 626). The old objection to armor—overloading the soldier—no longer holds, for he often does not march but is carried by lorry, motorcycle or airplane. Moreover, steel of great tensile power, as well as other suitable materials, is now available. At the same meeting Sir Richard Cruise (ophthalmologist) described a duralumin vizor which he had devised for the protection of the eyes. Though leading surgeons have advocated armor for fighting men from time to time, they seemed to make no impression on the War Office. However, it is now reported in the press that the authorities are testing a new type of body armor for troops, made from a new light metal. The chest and abdomen plates weigh no more than 2 pounds. Picked soldiers are now being put through special field training to test the armor and find whether their movements and mobility are slowed. Firing tests have been carried out with rifle, tommy gun, machine gun and shrapnel splinters. The armor is said to be proof against revolver fire at little more than point blank range.

Are Synthetic Vitamins Satisfactory?

In a paper read before the Royal Institution, Prof. J. C. Drummond, scientific adviser to the Ministry of Food, discussed planned wartime nutrition, pointing out that during the last great war the nutrition of the population was not considered from the point of view of vitamin deficiency. During the latter part of the war there were in medical literature only a few scattered references to vitamins and guarded references to the importance of something which today is fully understood. By 1918 there was evidence of progressive deficiencies, which, had they been continued, would have had far reaching effects on the health of the nation. Of the great advances in nutrition made since that period he dealt particularly with the vitamin B group. Many parts of the skein had yet to be unraveled. It was by no means certain that yeast extract or an extract of wheat germ, which was very rich in vitamin B, could be replaced, as far as the B complex was concerned, by the synthetic vitamin. Some factors had evidently not yet been identified. Hence the reluctance to depend on other than the natural foods. However well a mixture of synthetic vitamins was combined, there was always the fear that some essential factors, as yet unidentified, might be left out. It seemed therefore that the major problem of feeding the nation in wartime had to be solved, as far as possible, by providing natural foodstuffs. Just before the war, knowledge of nutrition advanced from the laboratory to clinical study. The League of Nations set up inquiries regarding nutrition in practically all the countries of the world, and much the same picture was presented everywhere. Among the peoples of western Europe there were clearcut food deficiencies, in nearly every case of the principal vitamins.

BUENOS AIRES

(From Our Regular Correspondent)

Jan. 25, 1942.

New Form of Dementia Paralytica

Dr. Gonzalo Bosch recently at the Academia Nacional de Medicina of Buenos Aires reported a case of atypical dementia paralytica of the Lissauer type observed in association with Dr. Braulio Moyano. It is generally accepted that in dementia paralytica of Lissauer's type the most acute lesions are those on the posterior regions of the brain, especially on the parietotemporal regions, which are exhibited by clinical symptoms of aphasia or astereognosis. Frequently the patients suffer from epileptic attacks. The author's patient was an inmate of the psychiatric hospital of Las Mercedes in Buenos Aires. He was 32 years old and was observed by the speaker and his collaborator for more than four years. He presented for some time transient loss of memory and a condition of puerilism and mental distraction. Later on he exhibited acute dementia and frequently had epileptic attacks. The form of dementia paralytica in this case was apparently simple. Necropsy showed light diffuse atrophy of the cortex which was acute in the right orbital lobe. The lobular circumvolutions were rough, retracted and wrinkled. The left orbital lobe was apparently normal. Microscopic study of the involved tissues showed demolition of the cortical roof, which in some regions was so acute that even the vestiges of cellular architecture had disappeared. The few remaining cells in the involved region exhibited acute changes of a chronic type. The diagnosis of paralytic atrophy of the orbital lobe is uncertain, because of the fact that, up to now, the symptoms have been unknown.

The Endocrine Glands

Dr. B. A. Houssay, professor of physiology at the Academia Nacional de Medicina of Buenos Aires, recently read a paper on the relations between the thymus and other endocrine glands. The influence of the latter on the former is proved by (1) the existence of anatomic endocrine thymic correlations before and after birth, (2) the changes of the thymus following removal of an endocrine gland and the favorable modifications of the structure from administration of extracts of the given endocrine gland, (3) the results of transplantations of endocrine grafts, (4) the stimulation of the thymus by administration of extract of the anterior lobe of the hypophysis and (5) the results of anatomicoclinical studies. Removal of the thymus does not produce endocrine disorders in white rats. The effects of the endocrine glands on the thymus may be either direct or indirect (through another endocrine gland). The hypophysial corticoadrenalotropic hormone produces involution of the thymus only if the adrenals exist. Probably certain thymic disorders are due to nutritional disturbances of endocrine origin. The

endocrine glands have moderate effects on the lymphatic glands, through the thymus. The structure has precise relations with the sex glands. The adrenals attenuate the functions of the thymus. Adrenalectomy in white rats results in development of hypertrophy of the thymus and of the lymphatic ganglions, which can be controlled by administration (injections) of hypophysial corticoadrenal hormones or by the hypertrophy of the accessory adrenals. Corticoadrenal and hypophysial corticoadrenalotropic hormones administered produce involution of the thymus. The thyroid stimulates development of the thymus. Thyroidectomy results in early involution of the structure, whereas hyperthyroidism stimulates or revives development of the thymus and of the lymphatic structures. The hypophysis plays an important role in stimulating the thymus. Gonadotropic and corticoadrenalotropic hormones cause involution of the thymus only when the gonads and adrenals respectively exist. The persistence or revival of the thymus is a frequent occurrence in acromegaly. Houssay said that several nutritional and endocrine factors are of the same importance in the development and functions of the thymus.

Public Health in Uruguay

The most important activity during 1940 was the reorganization of the health department and the drafting of a sanitary code. The training of a specialized staff has been extended to medical hygienists, visiting nurses and health officials.

Professor Linder of the U. S. Census Bureau spent six months in Uruguay to assist in the organization of the Vital Statistics Office, and, at the request of the ministry, prepared a vital statistics manual which is suitable for physicians and experts.

The epidemiologic reports were favorable; only a small focus of trichinosis has been discovered. Besides the regular health work may be mentioned extensive health education carried on in cooperation with the educational authorities, especially directed against tuberculosis, diphtheria and the use of maté in common, i. e., use of the same tube ("bombilla") by several persons for drinking maté, which is responsible for the spreading of infectious diseases. This habit is very common where maté is used. The construction of a number of hospitals has been begun and already two wings of a new psychiatric hospital of one thousand beds are completed.

Brief Reports

The council of the Faculty of Medicine of Buenos Aires elected a special commission of professors of the faculty to study the causes of the high infant mortality and also to determine why so many young men have been declared unfit for military service.

The National Academy of Medicine in Buenos Aires accepted several donations, one of 150,000 pesos (about $40,000) for the installation and maintenance of a section of cardiology in the Instituto de Investigaciones Físicas aplicadas a la patología humana; also the amount necessary to create a section for the treatment of chronic bronchopulmonary disorders.

An outbreak of cerebrospinal meningitis has been observed in Santiago de Chile, with more than 280 cases and sixty-one deaths. The authorities have now declared that this epidemic has ended.

The convention of the Argentine rheumatism association concerned itself particularly with investigations on the efficacy of Argentine sulfur springs. It was suggested that the therapeutic waters of the American continent should be more thoroughly investigated. Then it was suggested that homes for convalescents from rheumatism be established outside the capital, where rest treatments of from three to five months could be carried out, which would be impossible in the hospitals.

The Asociación Médica Argentina has introduced annual conventions that are to be held outside Buenos Aires. The first meeting was held in December in the large Argentine spa Mar del Plata (on the Atlantic Ocean). These annual meetings are to establish closer contacts and better cooperation among the scientific workers of the different regions of the country. The first convention considered the moral and material crisis of the medical profession with its causes and the means to remedy it, activity of the central committee for measures against hydatidosis, the importance of sanatoriums located on the ocean, and the necessity of social welfare work. A meeting of the Surgical Society of Argentina was combined with this convention.

In both October sessions for general medicine, which were held by the Asociación Médica Argentina, the vitamins of the B_1 group and vitamin D were discussed.

In November a delegation of one hundred and sixty Brazilian physicians visited the faculty of medicine of Buenos Aires in reply to a visit of Argentine physicians to Rio de Janeiro and São Paulo. During the week spent in Buenos Aires numerous scientific sessions, inspections and receptions were held.

In November the English surgeon Sir Harold Delf Gillies lectured in Buenos Aires at the invitation of the faculty of medicine and of the Academia Nacional de Medicina. His lectures concerned chiefly plastic surgery during war.

The Brazilian parasitologist Prof. H. da Rocha Lima lectured in Buenos Aires during the second half of November.

To commemorate the fiftieth anniversary of the existence of the Patronato de la Infancia in Buenos Aires the second national conference for the protection of neglected and delinquent children will be held during September 1942; the medical and legal boards and scientific institutes concerned with these questions are all represented in the committee under the chairmanship of Dr. Gregorio Aráoz Alfaro.

The National Gastroenterological Association of the United States proposed the founding of an Argentine branch to be presided over by Prof. Carlos Bonorino Udaondo, director of the National Dispensary for Diseases of the Digestive Tract, in Buenos Aires.

The Institución Cultural Española in Buenos Aires created a laboratory for histologic and histopathologic investigations in memory of Prof. S. Ramón y Cajal, to be directed by Prof. Pío del Río Hortega of Buenos Aires, a disciple of Ramón y Cajal. The institute is to promote investigations on the histology of the nervous system, employing the technic of Cajal and his school. Eight investigators will be required.

Marriages

JOHN RUFUS MCCRACKEN to Miss Alma Estelle Kee, both of Waynesville, N. C., in Greenville, S. C., Dec. 20, 1941.

SPOTSWOOD DOUGLAS STODDARD, Savannah, Ga., to Miss Marjorie Hornbeak of Fort Pierce, Fla., in December 1941.

DANIEL FORNEY HOKE MURPHEY to Miss Martha Virginia Mann, both of St. Petersburg, Fla., Dec. 27, 1941.

EUGENE LIVINGSTONE VICKERY, Lena, Ill., to Miss Millie Margaret Cox at Sheridan, Ind., Dec. 21, 1941.

HARRY ALBERT ADAMS, Hanover, Pa., to Miss Mary Neal Hudson in Eufaula, Ala., in December 1941.

PAUL PENNINGTON HEARN, Greenville, S. C., to Miss Ida Irene Kemp in Atlanta, Ga., Dec. 26, 1941.

DURWOOD JAMES SMITH, New York, to Miss Sue Maxwell Mauldin in Charlotte, N. C., recently.

HUGH EDWARD HAILEY to Miss Claire Ridley Hunnicutt, both of Atlanta, Ga., Dec. 10, 1941.

JAMES E. SHULL, Erwin, Tenn., to Miss Margaret Tucker of Kingsport, January 1.

Deaths

John Garfield Frost ✠ Chicago; Northwestern University Medical School, Chicago, 1907; clinical professor of surgery at Loyola University School of Medicine; fellow of the American College of Surgeons; past president of the American Association of Railway Surgeons; served during the World War; surgeon, St. Bernard's Hospital; associate surgeon, Illinois Central Hospital; chief surgeon for the Chicago and Eastern Illinois Railroad, Chicago and Western Indiana Railroad and the Belt Railway Company; aged 59; died, January 2, in Mercy Hospital of hypertensive heart disease and cerebral hemorrhage.

Joseph Emmons Briggs, North Dighton, Mass.; Boston University School of Medicine, 1890; member of the Massachusetts Medical Society; professor emeritus of surgery at his alma mater; fellow of the American College of Surgeons; consulting surgeon, Massachusetts Memorial Hospitals, Boston, Wesson Memorial Hospital, Springfield, Whidden Memorial Hospital, Everett, Leonard Morse Hospital, Natick, and Morton Hospital, Taunton; trustee of the Boston University; aged 72; died, January 4, in St. Petersburg, Fla.

William Lent Sneed, New York; Vanderbilt University School of Medicine, Nashville, Tenn., 1910; member of the Medical Society of the State of New York; fellow of the American College of Surgeons; consulting orthopedic surgeon, Nassau Hospital, Mineola, N. Y., North Country Community Hospital, Glen Cove, French Hospital and Hospital for Ruptured and Crippled, New York, and the Meadow Brook Hospital, Hempstead, N. Y.; aged 60; died, Dec. 7, 1941, of coronary sclerosis.

William Baker Gibson, Huntington, N. Y.; University of Vermont College of Medicine, Burlington, 1876; McGill University Faculty of Medicine, Montreal, Que., Canada, 1878; president of the Queens-Nassau Medical Society in 1900; at one time county coroner; instructor in materia medica from 1886 to 1888 and instructor in obstetrics and gynecology, 1888-1889 at the University of Vermont College of Medicine, Burlington; aged 85; died, Dec. 30, 1941, of diabetes mellitus.

Stephen Benedict Haessly ✠ Faribault, Minn.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1904; second vice president of the Minnesota State Medical Association; served during the World War; member of the board of sanatorium commissioners of the Mineral Springs Sanatorium, Cannon Falls; aged 66; died, January 11, in St. Mary's Hospital, Rochester, Minn., of periarteritis nodosa and infarcts of the brain.

Frank Smith Hale, Providence, R. I.; Tufts College Medical School, Boston, 1916; member of the Rhode Island Medical Society and the New England Obstetrical and Gynecological Society; fellow of the American College of Surgeons; served during the World War; aged 51; associate, Homeopathic and Miriam hospitals, Providence, Notre Dame Hospital, Central Falls, and consultant, St. Joseph's Hospital, where he died, January 12, of coronary thrombosis.

Vincent Tapp Churchman, Charleston, W. Va.; Jefferson Medical College of Philadelphia, 1889; member and past president of the West Virginia State Medical Association; past president and secretary of the Kanawha County Medical Society; fellow of the American College of Surgeons; member of the staff of the Kanawha Valley, Mountain State and St. Francis hospitals; aged 74; died, Dec. 21, 1941, of angina pectoris.

Edward Adams Shumway ✠ Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1894; member of the American Ophthalmological Society; formerly assistant professor of ophthalmology at his alma mater; aged 71; at various times on the staffs of the University Hospital, Children's Hospital, American Oncologic Hospital and the Lankenau Hospital, where he died, Dec. 19, 1941.

Jacob Schwinn ✠ Wheeling, W. Va.; Universität Bern Medizinische Fakultät, Switzerland, 1883; an Affiliate Fellow of the American Medical Association; fellow of the American College of Surgeons; past president of the Ohio County Medical Society; member of the staff of the Ohio Valley General Hospital and the Wheeling Hospital; aged 87; died, Dec. 26, 1941, of cerebral thrombosis.

Harry L. Myers ✠ Norfolk, Va.; University of Virginia Department of Medicine, Charlottesville, 1889; past president of the Norfolk County Medical Society; member of the American Laryngological, Rhinological and Otological Society; fellow of the American College of Surgeons; on the staff of the Hospital of St. Vincent de Paul; aged 72; died, January 5, in the Norfolk General Hospital.

Charles Sumner Christie ✠ Attleboro, Mass.; Medical School of Maine, Portland, 1898; member and past president of the Kent County (R. I.) Medical Society and the Rhode Island Medical Society; at one time chairman of the West Warwick (R. I.) school committee; served during the World War; aged 69; died, Dec. 18, 1941, in Seekonk, of coronary thrombosis.

Leonidas Blagdon, Montreal, Que., Canada; Laval University Faculty of Medicine, Quebec, Que., Canada, 1908; surgeon at the Hôpital Laval in France during the World War; was at one time professor of surgery and clinical surgery at the University of Montreal Faculty of Medicine; aged 56; on the staff of the Hôpital Notre Dame, where he died, January 1.

Albert Elmer Austin, Old Greenwich, Conn.; Jefferson Medical College of Philadelphia, 1905; member of the Connecticut State Medical Society; fellow of the American College of Physicians; served during the World War; formerly Congressman; for many years health officer of Greenwich; aged 64; died, January 26, of carcinoma of the lung.

Stephen Dolphard Brazeau ✠ Spokane, Wash.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1904; member of the Pacific Coast Oto-Ophthalmological Society; aged 66; died, January 1, in the Sacred Heart Hospital of acute nephritis.

William Alexander McKee, Chicago; University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1926; member of the Illinois State Medical Society; director of the psychiatric department of the Juvenile Court; aged 42; died, January 3, in the Passavant Memorial Hospital of hypertension and chronic nephritis.

Harry Milton Freeburg, Watertown, S. D.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1904; member of the South Dakota State Medical Association; chief of staff of the Luther Hospital; aged 65; died, January 4, in Tama, Iowa, of coronary thrombosis.

Frank Clinton Walch, Clintonville, Wis.; Wisconsin College of Physicians and Surgeons, Milwaukee, 1909; aged 57; died, Dec. 9, 1941, in the Veterans Administration Facility, Milwaukee, of cerebral hemorrhage, nephrosclerosis, hypertensive heart disease and arteriosclerosis.

John Blassingame Johnston, St. George, S. C.; University of the South Medical Department, Sewanee, Tenn., 1899; member of the South Carolina Medical Association; aged 62; for many years secretary of the Dorchester County Medical Society; aged 62; died, Dec. 25, 1941.

Leighton Carling Conn, Edmonton, Alta., Canada; McGill University Faculty of Medicine, Montreal, Que., 1909; professor of obstetrics and gynecology at the University of Alberta Faculty of Medicine; fellow of the American College of Surgeons; aged 55; died, Dec. 22, 1941.

Clement Nelson Clark ✠ Canton, Ohio; University of Wooster Medical Department, Cleveland, 1904; past president of the Stark County Medical Society; member of the medical examining board during World War I; aged 67; died, Dec. 31, 1941, of coronary thrombosis.

Harold John Hammond, Detroit; Detroit College of Medicine and Surgery, 1927; served during the World War; on the staff of the Woman's Hospital; aged 43; died, Dec. 20, 1941, in the Veterans Administration Facility, Dearborn, Mich., of ulcer of the duodenum.

Michael Ryan Barrett, Cincinnati; University of Cincinnati College of Medicine, 1935; member of the Ohio State Medical Association; psychiatrist for the county probate court; aged 34; died, Dec. 30, 1941, in the Holmes Hospital of a streptococcic meningitis.

William Henry Dyer, Warwick Neck, R. I.; Medical School of Maine, Portland, 1894; served during the World War; past president of the Kent County Medical Society; formerly superintendent of health in the city of Warwick; aged 72; died, January 2.

Isadore Seff, New York; Columbia University College of Physicians and Surgeons, New York, 1902; fellow of the American College of Surgeons; associate attending surgeon at Beth Israel Hospital; aged 62; died, Dec. 20, 1941, of coronary thrombosis.

George Walrath ✠ Staten Island, N. Y.; Albany Medical College, 1905; past president of the Richmond County Medical Society; for many years on the staff of St. Vincent's Hospital; aged 61; died, Dec. 21, 1941, of arteriosclerosis and nephritis.

James Wesley Clark, Santa Rosa, Calif.; Cooper Medical College, San Francisco, 1893; formerly member of the school board; surgeon examiner for the local draft board during the World War; aged 77; died, Dec. 16, 1941, of cerebral hemorrhage.

George Theodore Weber ✠ Olney, Ill.; Missouri Medical College, St. Louis, 1894; fellow of the American College of Surgeons; medical director and superintendent of the Olney Sanitarium; aged 73; died, Dec. 26, 1941, of coronary thrombosis.

Michael Albert Dowler, Glen Dale, W. Va.; University of Wooster Medical Department, Cleveland, 1879; member of the West Virginia State Medical Association; formerly county sheriff; aged 89; died, Dec. 23, 1941, of chronic nephritis.

Charles Myron Rexford, Watertown, N. Y.; University of the City of New York Medical Department, 1881; aged 86; died, Dec. 2, 1941, in the House of the Good Samaritan of chronic hypertensive heart disease and arteriosclerosis.

Howard F. Palm, Camden, N. J.; Jefferson Medical College of Philadelphia, 1881; member of the Medical Society of New Jersey; past president of the Camden County Medical Society; aged 86; died, January 2, of pneumonia.

William Laughlin Grace, Plaquemine, La.; Medical Department of Tulane University of Louisiana, New Orleans, 1894; member of the Louisiana State Medical Society; aged 74; died, January 12, of carcinoma of the lung.

Charles Henry Ball, Tiffin, Ohio; Baltimore University School of Medicine, 1900; served during the World War; aged 70; died, Dec. 30, 1941, in the Veterans Administration Facility, Chillicothe, of cerebral arteriosclerosis.

Stanley Ross Burlage, Bedford, Ohio; Western Reserve University School of Medicine, Cleveland, 1927; member of the Ohio State Medical Association; aged 50; was found dead, Dec. 30, 1941, of a self-inflicted bullet wound.

Glenn Kennedy Dennis, Wilmington, Ohio; Miami Medical College, Cincinnati, 1904; member of the Ohio State Medical Association; served during the World War; aged 62; died, Dec. 18, 1941, of coronary thrombosis.

Frederick Jackson La Riew, Washington, N. J.; Baltimore Medical College, 1898; aged 74; died, January 6, in the Easton (Pa.) Hospital of arteriosclerosis and coronary occlusion.

William Brown Hyde ✠ Bakersfield, Vt.; Kentucky School of Medicine, Louisville, 1894; superintendent of schools from 1895 to 1907; for many years health officer; aged 75; died, Dec. 29, 1941, of coronary thrombosis.

Oscar T. Hines, Huntington, W. Va. (licensed in West Virginia in 1902); veteran of the Spanish-American War; on the staff of St. Mary's Hospital; aged 67; died, January 1, of pneumonia and chronic myocarditis.

J. B. Bagley, Waresboro, Ga.; Atlanta Medical College, 1894; member of the Medical Association of Georgia; at one time county coroner; aged 75; died in Waycross, Dec. 30, 1941, of myocarditis and nephritis.

Frederick William Brown, Franklin, Pa.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1899; member of the school board; formerly mayor of Franklin; aged 68; died, Dec. 21, 1941.

Henry Arthur Cassebeer, New York; Columbia University College of Physicians and Surgeons, New York, 1900; served during the World War; aged 67; died, Dec. 29, 1941, of acute dilatation of the heart.

Jacob G. Fisher ✠ Danville, Ill.; Rush Medical College, Chicago, 1901; aged 66; on the staffs of the St. Elizabeth Hospital and the Lake View Hospital, where he died, Dec. 24, 1941, of coronary thrombosis.

John Francis Maguire, Boston; Harvard Medical School, Boston, 1908; served during the World War; aged 66; died, Dec. 27, 1941, in the Veterans Administration Facility, Rutland, of cerebral hemorrhage.

William Richardson, Athens, Texas; Kentucky School of Medicine, Louisville, 1892; aged 75; died, Dec. 30, 1941, in the Nan Travis Memorial Hospital, Jacksonville of chronic nephritis and myocarditis.

Allyn King Foster Jr. ✠ New York; Rush Medical College, Chicago, 1930; assistant attending on the surgical staff of the Downtown Hospital; aged 36; died, January 17, in the Bellevue Hospital.

Thomas Dillon Hollingsworth, Akron, Ohio; Eclectic Medical Institute, Cincinnati, 1893; member of the Ohio State Medical Association; aged 73; died, January 6, of carcinoma of the sigmoid colon.

Joseph John Gomes ✠ Oakland, Calif.; College of Medical Evangelists, Los Angeles, 1923; aged 60; died, January 7, in the Peralta Hospital of coronary occlusion, hypertension and diabetes mellitus.

Guy Forrest Via, Forest Grove, Ore.; University of Oregon Medical School, Portland, 1909; aged 61; died, Dec. 7, 1941, in the Portland (Ore.) Sanitarium and Hospital of intestinal obstruction.

David A. Lane, Washington, D. C.; Howard University College of Medicine, Washington, 1894; veteran of the Spanish-American War; aged 82; died, Dec. 15, 1941, of bronchopneumonia.

Samuel Bryan Smith, Merchantville, N. J.; Hahnemann Medical College and Hospital of Philadelphia, 1888; aged 87; died, Dec. 20, 1941, of cerebral thrombosis and hypostatic pneumonia.

Charles C. Hankins, Springfield, Mo.; American Medical College, St. Louis, 1884; at one time mayor of Golden City; aged 81; died, Dec. 14, 1941, of arteriosclerosis and chronic nephritis.

Marshall D. Gray, Shushan, N. Y.; New York Homeopathic Medical College and Hospital, New York, 1895; aged 71; died, January 13, of chronic emphysema and acute myocarditis.

Emma Scott, Westerville, Ohio; Woman's Medical College of Cincinnati, 1893; for many years a medical missionary in India; aged 75; died, Dec. 17, 1941, of gastrointestinal malignancy.

Edgar H. Ford, Knoxville, Tenn.; Tennessee Medical College, Knoxville, 1903; member of the Tennessee State Medical Association; aged 62; died, Dec. 23, 1941, of cerebral hemorrhage.

Charles Wilbur Hull, Farmer City, Ill.; Dearborn Medical College, Chicago, 1906; member of the Illinois State Medical Society; aged 74; died, January 9, of acute dilatation of the heart.

John Alexander Koler, Los Angeles; Medical Department of Rocky Mountain University, Denver, 1897; aged 72; died, Nov. 16, 1941, of acute gangrenous cholecystitis.

Augustus Monroe Jones, Enid, Okla.; Missouri Medical College, St. Louis, 1882; aged 85; died, Dec. 25, 1941, in the Independence Hospital of arteriosclerosis.

Julius Eugene Salsbury, St. Petersburg, Fla.; Eclectic Medical Institute, Cincinnati, 1883; aged 86; died, Dec. 30, 1941, of cerebral hemorrhage.

Thomas Sargent Bailey, Newnan, Ga.; Atlanta College of Physicians and Surgeons, 1902; aged 66; died, Dec. 13, 1941, of coronary occlusion.

Grace Allen Graves, Chicago; Bennett College of Eclectic Medicine and Surgery, Chicago, 1901; aged 74; died, January 26, of chronic myocarditis.

Richard Vincent Barta, Park City, Utah; Denver and Gross College of Medicine, 1905; aged 67; died, January 1, following a pulmonary hemorrhage.

Alvin Adam Koch, Providence, R. I.; Jefferson Medical College of Philadelphia, 1896; aged 70; died, Dec. 26, 1941, of coronary thrombosis.

Joseph Franklin Hall, Kirkwood, Ill.; Hospital College of Medicine, Louisville, Ky., 1907; aged 60; died, January 5, of coronary thrombosis.

Stuart Elliott Nolan, Los Angeles; Tulane University of Louisiana School of Medicine, New Orleans, 1927; aged 40; died, Nov. 14, 1941.

Daikichi Matsuzawa, Long Island City, N. Y.; Northwestern University Medical School, Chicago, 1935; aged 36; died, January 1.

Arthur N. Brown, Richland, Texas; Missouri Medical College, St. Louis, 1887; aged 81; died in December 1941 of diabetes mellitus.

A. K. Gilbert, Clayton, Ind.; Medical College of Ohio, Cincinnati, 1877; aged 90; died, January 16, of arteriosclerosis.

Bureau of Investigation

NEW NAMES FOR OLD SWINDLES

Collecting Fraud Orders as a Hobby

Fraud orders issued by the United States Post Office are really effective—as far as the trade styles and names used at the time of the order are concerned. Circumvention therefore requires the use of new trade styles and names—but this fortunately results in the issuance of supplemental orders by the Post Office Department as indicated in the following paragraphs:

Cable Products and Oralene, Inc.—From New York one Eugene Cable, operating under a number of "Cable" firm names, put out "Pyro" under what the Post Office declared to be false and fraudulent representations and promises. These were to the effect that when used as directed it would quickly overcome, correct and remove the cause of pyorrhea, trench mouth and bleeding gums and prevent loss of teeth, and that all users might expect results similar to those reported in alleged testimonials published in the sales literature. At the hearing of this case a government chemist testified that his analysis of Pyro had shown it to be an aqueous solution consisting of 1.45 Gm. of sodium hypochlorite per hundred cubic centimeters. He added that special tests to determine the presence or absence of chlorothymol and oil of peppermint had not revealed these substances. Expert medical and dental witnesses testified for the government that pyorrhea and bleeding gums may be due to numerous local and systemic conditions and that although sodium hypochlorite might have some action on them its use in the form of Pyro would be ineffective because this product when taken into the mouth would lose its antiseptic properties before coming in contact with all of the micro-organisms which, in pyorrhea, are found deep within the gums as well as on the surface. Much additional evidence was presented by the experts to show the worthlessness of Pyro and on May 14, 1941 the Post Office issued a fraud order against the names Cable Products, C. B. Cable Products, F. I. Cable Products, D. N. Cable Products and D. L. Cable Products. Some time thereafter the Post Office obtained evidence that Eugene Cable was continuing his mail order scheme and using a new trade style, Oralene, Inc. Also, he was notifying former customers of Cable Products that "due to certain legal technicalities it was advisable to dissolve Cable Products and organize a new corporation." This evasion of the original fraud order was so transparent that on Oct. 23, 1941 the Post Office issued a supplementary one covering the name Oralene, Inc.

Emile Carpentier.—In THE JOURNAL, Sept. 2, 1933, page 795, appeared a discussion of the fraud order that the Post Office Department had issued on April 25 of that year against Emile Carpentier of Hillsdale, N. J., for using the mails to promote his quack "consumption cure" variously known as "Carpentier's T. B. Compound" and "Dr. Emile Carpentier's Compound of Oriental Herbs and Naturopathic-Nonsurgical Treatment." The article showed that government chemists had reported the product to be essentially a mixture of animal fat with honey and gentian root, which according to expert medical testimony could not cure or even mitigate any form of tuberculosis; that Carpentier is not a physician and presumptuously used "Dr." before his name and "N.D." after it on the basis of a "certificate of membership" that he had purchased for $15 in 1932 from the "American Naturopathic Association" without even taking a course of study, and that in October 1929 he had been convicted of violating the Medical Practice Act of New Jersey and fined $200. Carpentier attempted to evade the fraud order of April 1933 by having the business continued under his wife's name and accordingly in March 1940 the Post Office ordered him to show cause why a supplemental fraud order should not be issued against him and his wife. His defense consisted chiefly of testimonials alleged to have come from persons who had taken his "treatment." The government produced evidence that Carpentier had been advertising in newspapers "Tuberculosis is now CURED with Lungs Clear in about 6 months by Dr. Emile Carpentier, N.D., Lung Specialist with his T. B. Compound of Oriental Herbs and Naturopathic Treatment . . . without Diagnosing, Surgery or Segregation." (Treating tuberculosis "without segregation" is of course not in the interests of the public health—treating it "without diagnosing" it is, however, quackery in the nth degree even when it is frankly stated, as in this case.) The government further showed that the advertisements directed "address all mail to Mrs. E. Carpentier" and that on receipt of replies Carpentier addressed personal letters to the inquirers. These activities were held to constitute a violation of the fraud order of 1933 and accordingly the Post Office on May 28, 1940 issued a supplementary fraud order to cover the names Mrs. E. Carpentier, Mrs. Emile Carpentier, Emile Carpentier, Discoverer, Mr. and Mrs. Carpentier, M. Carpentier, Mrs. M. Carpentier and Thomas E. Carpentier. Meantime, in February 1938 another government agency, the Federal Trade Commission, had issued Cease and Desist Order No. 3073, prohibiting Emile Carpentier from further representing that his "T. B. Compound" possesses curative or healing value in tuberculosis of the lungs, larynx, intestines, kidneys, brain or any other part of the body or in chronic bronchitis, colitis or chronic gastritis, that the product contains any oriental herbs or that physicians have prescribed it or have sent tuberculous patients in a critical or incurable condition to Carpentier. It is presumed that sooner or later Carpentier will "catch on" to what these governmental agencies have in mind in regard to his stuff.

Executive Sales Corporation.—In February 1938 the Post Office Department notified Landon and Warner, Inc., of Chicago, George Landon, president, and Michael M. Warner, secretary-treasurer, to show cause why they should not be deprived of the use of the mails for using that service to sell their "Director Belt" under false and fraudulent representations and promises. Thereupon these defendants filed an affidavit with the Post Office, promising to cease selling their belt through the mails. The government, however, developed evidence that, instead, the concern simply gave the belt a new designation, "Executive," adopted a different trade style, Executive Sales Corporation, and continued to sell the device through the mails and to recommend it to obese persons to relieve strain on the heart, lungs and digestive organs, and overcome indigestion, high blood pressure, backaches and some other disorders. Again the Post Office ordered the concern (under its new name) to show cause why a fraud order should not be issued against it. At the hearing of the case the defendants presented several lay witnesses and two osteopaths, the latter testifying that the belt was valuable in treating obesity and relieving the other conditions mentioned. On the contrary, however, expert medical witnesses for the government testified that the belt would not cure obesity or lessen the strain that this disorder produces on the various organs of the body and that these conditions can be corrected only by treatment adapted to each particular case after careful diagnosis. The sale of this device therefore was declared to be a scheme for obtaining money fraudulently, and on Sept. 4, 1940 the mails were closed to the Executive Sales Corporation and its officers and agents. Another government agency, the Federal Trade Commission, also had taken action against the concern when it was operating under its original name. On Dec. 12, 1936, the Commission reported that it had ordered George Landon and M. M. Warner, trading as Landon and Warner, Chicago, to cease advertising that their "Director Belt" was a safe and efficacious method of treating abdominal obesity, would cure constipation, eliminate bloating after meals or make the wearer feel younger. Maybe they could sell the belt for holding up trousers without so much governmental interference.

H. J. Smith, Novelty Rubber Company, Atex Novelty Company and Atex Rubber Company.—These are some of the names under which a concern at Hamilton, Ontario, has variously done business for years, selling through the mails what the Post Office Department has described as "certain obscene pictures and contraceptives." According to that department a fraud order was issued as long ago as April 29, 1931 against H. J. Smith and the Novelty Rubber Company. Later it was discovered that the fraudulent scheme was being continued and it was necessary to extend the fraud order on eight occasions as follows: Nov. 11, 1931 to cover the name S. S. Frank at Hamilton, Ontario; Feb. 1, 1932 to cover the name I. S. Frank at Buffalo, N. Y.; March 8, 1932 to cover the name H. Smith at 11 Chatham Street, Hamilton; April 11, 1932 to cover the names H. Smith, Mr. Smith and P. O. Box 91, Hamilton; Aug. 7, 1936 to cover the N-R Mfg. Co., Novelty Rubber Mfg. Co., H. Smith, Manager, Mr. H. Smith, H. Smith and Box 353 and their officers and agents at Hamilton; Feb. 27, 1939 to cover the names Atex Rubber Company, M-O Drug Company, Box 231 and their officers and agents at Hamilton; and Jan. 10, 1940 to cover the name Atex Co. and its officers and agents at Hamilton, and on Jan. 10, 1941, to cover the name Dept. R., Manager, at Hamilton. Some time thereafter the Post Office found evidence that the scheme covered by these various fraud orders was still being conducted, now under the names Atex Novelty Company and Atex Rubber Company at Hamilton, and on July 11, 1941 a new fraud order was issued to cover these names.

Kayseemo Company.—In this department of THE JOURNAL Oct. 7, 1939, page 1429, the fraudulent activities of one Lyle Carver of Kansas City, Mo., were discussed at some length. The article brought out that Carver had for years promoted quack "cures" for goiter, epilepsy, diabetes, kidney and bladder disorders and sexual debility in men and women and had operated under such names as "Oritone Laboratories," "Oriental Laboratories" and "Lyell H. Carver & Co." In fact, this exposé showed that still earlier (Jan. 15, 1927) the Post Office had issued a fraud order against Carver's "Oritone Laboratories" and had again barred Carver from the use of the mails on Sept. 24, 1938, on the ground that his "Thyogland Treatment" for goiter constituted another fraud. Carver characteristically flouted this fraud order of 1938 and continued to promote his Thyogland fakery through the mails by adopting a new trade style, the Kayseemo Company. When the Post Office discovered this trickery it issued a supplemental order on Feb. 23, 1940 to cover this new name. As THE JOURNAL stated in its previous article, "It now remains to be seen whether Carver will again pop up in the field of mail order quackery operating under a new trade style and exploiting a new 'cure.'" Some devotees of quackery apparently do not place any significance whatever on the issuance of Post Office fraud orders.

Sorko, Lozinska, Sorokowski—and "Mizar."—At different times this department of THE JOURNAL has discussed Mizar, which for years was promoted as an alleged remedy for rheumatism. The first discussion appeared in THE JOURNAL as long ago as July 18, 1925, page 212. It was there shown that the product had at first been put out from Chicago but that its promoter, a J. Sorokowski, had moved his business to Oak Park, a suburb. The article mentioned three cases in which physicians reported that users of Mizar had come to them exhibiting various forms of dermatitis following applications of the "remedy." The article also brought out that the American Medical Association's chemists had reported that Mizar was an ointment whose chief active ingredient was essentially an extract of capsicum in a base of petrolatum, soap, a saponifiable fat

and water. Eventually, as related in THE JOURNAL, Oct. 19, 1929, page 1240, the Post Office Department caught up with Sorokowski and debarred him from the use of the mails, having proved to its satisfaction that his scheme of selling through the mails Mizar, "Logos" (for menstrual disorders) and "Zdrojanka" ("an unequalled remedy for headache and hair strengthening") constituted a fraud. The fraud order was issued against the names Joseph Sorokowski, Z. Joseph Sorokowski, Jozef Sorokowski and J. Sorokowski. According to the Post Office memorandum on this case, Sorokowski volunteered the information that Mizar was a mixture of vaseline, marrow from horse and lamb bones and "a certain root of a plant," which apparently he was unwilling to admit was red pepper. He testified that his Logos for amenorrhea and "loss of manly strength" contained "the genital glands of the beaver." Government chemists had found that it contained 82 per cent of alcohol with other volatile matter aggregating 93.5 per cent. The memorandum also brought out that Sorokowski was a carpenter by trade and had had no medical training or experience. As it was discovered that Sorokowski, in spite of the fraud order, was continuing business and had added a new firm name, "Mizar," the Post Office Department on Aug. 27, 1931 extended the original fraud order to cover this new trade style. A further fraud order was issued March 31, 1932 against the name Mizar Company. Still the business continued, and on Oct. 10, 1938 Chryzostom Lozinski of Chicago was notified by the Post Office to show cause why a fraud order should not be issued against him on the ground that he was selling Mizar through the mails and was obtaining it from Joseph Sorokowski of Oak Park. Lozinski offered to file an affidavit agreeing to discontinue the business. This was accepted and the case closed. Later it was discovered that Marta Lozinska, wife of Chryzostom, was accepting orders and payments for Mizar through the mails at the same address as her husband had used and also that one A. D. Sorokowski, likewise connected with the business, was using the Oak Park address of Joseph Sorokowski and that he was supplying the product to the Sorko Medicine Company and Marta Lozinska as well as cashing the money orders that customers sent them. Government chemists found Mizar now to be a mixture of volatile oils including those of wintergreen, camphor and cineol in a base of petrolatum, beeswax and saponifiable fat, chiefly croton oil. In April 1941 the Post Office ordered the Sorko Medicine Company and Marta Lozinska of Chicago and A. D. Sorokowski of Oak Park to show cause why a fraud order should not be issued against them for perpetuating the Mizar business. Their attorney replied to the Post Office that they were willing to sign an affidavit promising to discontinue the enterprise. Because of the reputation of this business the offer was refused. Neither the respondents nor their attorney appeared at the hearing of the case, but a chemist and a qualified medical expert presented their testimony for the government and on June 13, 1941 a fraud order was issued against the three new names under which the Mizar business had been operating, Sorko Medicine Company, Marta Lozinska and A. D. Sorokowski.

The D. H. Brown Fraud.—D. H. Brown, M.D., is a Negro quack who has promoted a fraudulent "consumption cure" variously from Jacksonville and St. Augustine, Fla., under such names as "Dr. Brown's Magnolia Remedy," "Dr. Brown's New Consumption Remedy," "Creoco" and perhaps some others. No fewer than four fraud orders have been issued against Brown under his own name or other trade styles, such as Magnolia Remedy Company, Creoco Remedy Company, Rudolph Brown and Pauline Brown. The latter was said to be the maiden name of his daughter, who is reported to be married and living in New York. As long ago as 1917 Brown was prosecuted under the Pure Food and Drugs Act for making fraudulent claims in connection with his nostrum and fined a trivial $50 and costs in a federal court. The case was reported Feb. 22, 1919 in this department of THE JOURNAL, which also in the issue of Feb. 17, 1923 discussed at some length the first Post Office fraud order brought against Brown, under the name Magnolia Remedy Company. Brown declared that his nostrum consisted chiefly of a compound of creosote, Donovan's solution and extract of malt. The federal chemists, however, had testified that the stuff contained neither arsenic nor mercury, both of which are components of Donovan's solution. The Creoco Remedy Company was the trade style used by Brown to evade this fraud order, and when a second fraud order was issued against him, this time under the name Creoco Remedy Company, Brown again flouted the government order by continuing his fraud and adopting the name Rudolph Brown. On Aug. 3, 1936 a third fraud order was issued, this one covering the name Rudolph Brown. But D. H. Brown, running true to form, also evaded this third fraud order by continuing in business and using the name of his daughter, Pauline Brown. On April 19, 1940 the Post Office Department issued its fourth fraud order against the business by closing the mails to the name Pauline Brown. Maybe he has more children whose names he can defile—then again he may persuade John Doe to let him use his name.

All of these cases merely serve to illustrate that the issuance of a fraud order results from a civil action (U. S. Code, Title 39, Sec. 259) and not a criminal one. Presumably in these cases there was insufficient evidence on which to institute criminal proceedings under U. S. Code, Title 18, Sec. 338. A conviction under that section is punishable by a fine not exceeding $1,000 or imprisonment for a term not in excess of five years, or both. (For further details in regard to these civil and criminal statutes see THE JOURNAL, Nov. 2, 1940, p. 1566.)

Correspondence

EFFECTS OF ALUMINUM HYDROXIDE ON ABSORPTION OF PHOSPHORUS

To the Editor:—The following comments on the effect of aluminum hydroxide on the absorption of phosphorus may be of interest in considering this topic in relation to ulcer therapy.

In the January 3 issue of THE JOURNAL, Dick and Eisele state, in their article on "The Treatment of Peptic Ulcer Without Alkalis," that "therapeutic doses of aluminum hydroxide may interfere with the absorption of inorganic phosphorus from the intestinal tract, thereby deranging the calcium metabolism of the body." Two references were given in support of this statement. One was by Street and Barlow and told of the reduced rate of growth in rats fed a diet containing aluminum sulfate and only the minimal amount of phosphorus (0.24 per cent) necessary for normal growth. The other reference was to work that Willie Mae Freeman and I did on the use of aluminum hydroxide as an agent to reduce retention of phosphorus in children with an elevated serum inorganic phosphorus due to chronic renal insufficiency. A more detailed account of the latter study appeared in the *American Journal of Diseases of Children* (**61**:981 [May] 1941). In neither report are the diets employed comparable to those generally consumed by a patient on an "ulcer diet."

The effect of aluminum hydroxide on the urinary inorganic phosphorus excretion of normal persons receiving a "light ulcer diet" is reported in the *Archives of Internal Medicine* (**67**:563 [March] 1941) by Fauley, Freeman, Ivy, Atkinson and Wigodsky. The inorganic phosphorus of the urine was reduced to approximately 60 per cent of its previous value by the daily ingestion of 240 cc. of 5 per cent aluminum hydroxide. The diet of these subjects contained approximately 2 Gm. of phosphorus daily and was similar to a "light ulcer diet." In discussing these findings the authors state that conditions predisposing to the development of a negative phosphorus balance on aluminum hydroxide gel therapy are not likely to be present for a prolonged period in the patient with ulcer. This statement is true because the ordinary ulcer diet contains liberal amounts of phosphorus.

If phosphorus rich products, such as milk and cheese, are omitted from the diet of the person consuming therapeutic amounts of aluminum hydroxide, or if there is an insufficiency of pancreatic juice, a negative phosphorus balance may occur. A number of factors which influence the effect of aluminum hydroxide on phosphorus absorption were pointed out in the last two articles mentioned.

Consideration of the properties of aluminum sulfate appears irrelevant to the problem of ulcer therapy, except that this compound may serve to illustrate some properties of the aluminum ion. While the qualitative effect of aluminum hydroxide and aluminum sulfate on phosphorus absorption might be similar, there may be decided differences quantitatively. The results reported by Street and Barlow point directly to this conclusion, as they found that an aluminum hydroxide powder had much less effect on the growth of rats than did a corresponding amount of aluminum present as the sulfate. The results of Fauley and his associates indicate that aluminum hydroxide is much less active than the chloride in extracting phosphorus from the intestine.

The normal kidney is capable of remarkable economy in the conservation of phosphates, as is evidenced by the fact that this element largely disappears from the urine of animals maintained on a phosphorus deficient diet. Renal impairment, starvation, acidosis and bone disease are illustrative of conditions which

alter the normal relation between intake and excretion of phosphorus; consequently in such conditions the urinary phosphates no longer serve to indicate the extent of absorption of this element from the intestine. However, excluding the excessive mobilization of this element from the tissues of the body, its presence in even moderate amounts in the urine argues against a phosphorus deficiency.

The available data furnish inadequate proof that the ulcer patient, maintained on a phosphorus rich diet, will experience a phosphorus deficiency as the result of using aluminum hydroxide as an antiacid.

SMITH FREEMAN, M.D.,
Chicago.

TYPHOID IN THE SOUTH

To the Editor:—In Queries and Minor Notes in THE JOURNAL, January 24, page 337, under the heading "Typhoid Immunization," I find published one of the common slurs made against the South by certain persons who seem to be ignorant of the facts. The expression that is particularly offensive in the letter is "It is common knowledge that, throughout the South, typhoid is pandemic and primitive conditions exist." This communication is signed by one Dr. O. L. Murphy of Simsbury, Conn. Dr. Murphy is much concerned about the army camps in the South.

There has been a myth handed down from generation to generation in certain regions in the North and in the New England states especially to the effect that there hangs over the South a terrible poisonous vapor and that the soil is a primitive swamp filled with noxious reptiles and insects in which situation no one but a native "red-neck" can live—that the whole South is a hot bed of malaria, yellow fever, cholera and every plague known to man.

Dr. Murphy states "It is common knowledge that, throughout the South, typhoid is pandemic." Dr. Murphy either does not know the meaning of the word pandemic or does not know that there is no pandemic of typhoid in the South. I rather believe that he does not even know the meaning of the word. Dorland's Medical Dictionary defines pandemic as "(1) widely epidemic; (2) a widespread epidemic." In other words, a pandemic is worse than an epidemic, and, if typhoid is pandemic in the South, it means that practically all of the population in each state is suffering from an epidemic of typhoid.

Coming down to facts, during 1940 there were only twenty-one deaths in Mississippi from typhoid out of a population of more than two million people. We had more deaths occur from old people stumping their toes and falling during the same period.

Another fact is that the death rates of Mississippi and Connecticut for the year 1940, and as published in a report from the Bureau of the Census on Oct. 17, 1941, show that the death rate in Connecticut was 10.5 and that in Mississippi it was 10.6, just 0.1 per cent higher, even in the face of the fact that Connecticut's population is 98.1 white, while Mississippi's population is only 50 per cent white. The white death rate in Mississippi during 1940 was 8.6 per thousand, which is almost 2 per thousand population less than the death rate in Connecticut. In fact, when the white death rate in Mississippi is compared with the total death rates in all states containing less than 10 per cent Negro population there are only a couple of states in the union which have lower death rates than Mississippi.

It seems that there ought to be a campaign of education throughout some sections of the United States to teach a certain class of people that the Civil War ended seventy-seven years ago.

R. N. WHITFIELD, M.D., Jackson, Miss.
Director, Vital Statistics, Mississippi
State Board of Health.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

UNITED STATES PUBLIC HEALTH SERVICE

Examination. Assistant Surgeon (medical only), commissioned corps. Examinations will be held as follows:

U. S. P. H. S. Relief Station, 424 Federal Bldg., Los Angeles . . March 9
Colorado Psychopathic Hospital, Denver . . March 11
U. S. Marine Hospital, Kirkwood, Mo. . . March 13
U. S. P. H. S. Hospital, Fort Worth, Texas . . March 27
U. S. Marine Hospital, New Orleans . . March 30
Liaison Office, U. S. P. H. S., Room 319, Grant Bldg., Atlanta, Ga. . . March 31

Apply Surgeon General, U. S. P. H. S., Washington, D. C.

BOARDS OF MEDICAL EXAMINERS

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL, February 28, page 751.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Part III. Various centers, June. Exec. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Oral. Part II.* Atlantic City, June 6-7. Final date for filing application is March 7. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOGY: *Oral. Groups A and B.* Cleveland, Jan. 14-15, 1943. Final date for filing application is Dec. 7. *Written.* Various centers, Nov. 16. Final date for filing application is Oct. 5. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Oral.* St. Paul, April, in advance of the meeting of the American College of Physicians, and Philadelphia, June, in advance of the meeting of the American Medical Association. Applications should be on file 6 weeks in advance of the date of oral examination. *Written.* Oct. 19. Final date for filing application is Sept. 1. Sec., Dr. William S. Middleton, 1301 University Ave., Madison, Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: New York, May 12-13. Sec., Dr. R. Glen Spurling, 404 Brown Bldg., Louisville, Ky.

AMERICAN BOARD OF OPHTHALMOLOGY: *Oral.* Baltimore, June 6 and Philadelphia, June 8. Sec., Dr. John Green, 6830 Waterman Ave., St. Louis.

AMERICAN BOARD OF RADIOLOGY: *Oral. All Groups.* Atlantic City, June 4. Final date for filing application is April 1. Sec., Dr. Byrl R. Kirklin, 102-110 Second Ave., S. W., Rochester, Minn.

Minnesota October Report

The Minnesota State Board of Medical Examiners reports the written examination for medical licensure held at Minneapolis, Oct. 21-23, 1941. The examination covered 12 subjects and included 60 questions. An average of 75 per cent was required to pass. Sixty-nine candidates were examined, all of whom passed. Ten physicians were licensed to practice medicine by reciprocity and 5 physicians so licensed on endorsement of credentials of the National Board of Medical Examiners. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
Stanford University School of Medicine		(1940)	1
University of Colorado School of Medicine		(1940)	1
Yale University School of Medicine		(1940)	1
Georgetown University School of Medicine		(1940)	1
Emory University School of Medicine		(1939)	1
Loyola University School of Medicine		(1941)	1
Northwestern University Medical School		(1936), (1940, 2), (1941, 3)	6
Rush Medical College		(1938), (1939, 2)	3
University of Chicago, The School of Medicine		(1939), (1941)	2
University of Illinois College of Medicine		(1941)	1
Indiana University School of Medicine		(1938, 2)	2
State University of Iowa College of Medicine		(1940, 2)	2
University of Louisville School of Medicine		(1938)	1
Johns Hopkins University School of Medicine		(1939, 2)	2
University of Maryland School of Medicine		(1939)	1
Harvard Medical School		(1941)	1
University of Minnesota Medical School		(1939), (1940, 7), (1941, 21)	29
Duke University School of Medicine		(1938), (1940)	2
Ohio State University School of Medicine		(1940)	1
University of Cincinnati College of Medicine		(1940)	1
University of Oklahoma School of Medicine		(1937)	1
University of Oregon Medical School		(1940)	1
University of Pennsylvania School of Medicine		(1939)	1
University of Texas School of Medicine		(1938), (1939, 2)	3
University of Wisconsin Medical School		(1939)	1
Marquette University School of Medicine		(1941)	1
McGill University Faculty of Medicine		(1939)	1

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Stanford University School of Medicine		(1938)	California
Northwestern University Medical School		(1940)	Illinois
State University of Iowa College of Medicine		(1940)	Iowa
Wayne University College of Medicine		(1935)	Michigan
University of Minnesota Medical School		(1939)	Michigan
Creighton University School of Medicine		(1927)	Nebraska

University of Nebraska College of Medicine	(1938)	Nebraska
University of Oklahoma School of Medicine	(1940)	Oklahoma
Jefferson Medical College of Pennsylvania	(1923)	Penna.
Marquette University School of Medicine	(1937)	Louisiana

LICENSED BY ENDORSEMENT

School	Year Grad.
College of Medical Evangelists	(1936)
Loyola University School of Medicine	(1937)
Northwestern University Medical School	(1940)
Harvard Medical School	(1937)
University of Minnesota Medical School	(1941)

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Death from Pulmonary Embolism Following Tonsillectomy.—The physician defendant completed a tonsillectomy on Mrs. Michael at a hospital in Rochester, N. H., about 9:40 a. m. According to the bedside notes, her condition was then "good." At 10 o'clock she vomited a moderate amount of blood and apparently bled continuously until 12:05 p. m. The physician was notified of this condition three times between 10 and 10:50, but being engaged in another operation he was unable to visit the patient until the latter time. After examining her, he was convinced that she was in no immediate danger and accordingly deferred action until the operating room was again available. At 12:05 she was returned to the operating room and was then "bleeding from left fossa." Monsel's solution and pressure were administered and bleeding or oozing immediately stopped, but as an extra precaution a sponge was stitched into the fossa. The patient was not bleeding on leaving the table. When the patient was taken from the operating room her pulse was of good quality and her condition was better. The physician then left the hospital to make a call elsewhere. At 1:15 the patient started to spit bright red blood, and an attempt was made to call the physician defendant but he could not be reached immediately, and at 1:20 two other physicians were called. At 1:25 the patient was "cyanotic with bright red blood purging from mouth." At 1:28 another physician arrived and immediately gave oxygen and artificial respiration, but the patient died about 1:45, death being immediately caused by a pulmonary embolism. The physician defendant arrived shortly after her death. Subsequently, the administrator of the patient's estate brought suit against the physician for malpractice. The trial court directed a verdict for the defendant and the plaintiff brought exceptions to the Supreme Court of New Hampshire.

The malpractice of which the physician had been guilty the plaintiff claimed was a "negligent failure to give proper care and attention following the operation." If, said the Supreme Court, a finding that the physician defendant was at fault might be made on the evidence that he undertook another operation immediately after the operation on the patient was completed so that he was unable to respond to the first three calls made by the patient's nurse and, second, that he responded to a call outside of the hospital soon after the patient had been treated the second time, the plaintiff's case nevertheless would fail because the evidence does not establish the causal connection between these alleged acts of neglect and the patient's death. The immediate cause of the patient's death was a pulmonary embolism, described in the testimony as a foreign body, such as a blood clot, which finds its way into the blood stream and goes "whirling through the circulation" until it strikes a blood vessel too small to permit its passage and plugs it. According to the defendant, there is "no way known to the medical profession to anticipate or prevent an embolism." The plaintiff, on the other hand, produced testimony that it was "the continued bleeding from the operation which brought about the embolism" and argued that the prolonged period of bleeding disclosed by the evidence might have been avoided if the defendant had given the patient adequate attention. There is no basis, answered the court, in the evidence, however, for finding that the embolism in question had started prior to the second operation. The patient left the operating room after that operation with the bleeding completely stopped and generally in fair condition. Any evidence of negligence prior to that time may, therefore, be dismissed as noncausal. At 1:15 the patient began to spit "bright red blood," and the defendant gave as his opinion that "that's when she probably had the start of her embolism." He further testified that, assuming that she died from an embolism, there was nothing in his judgment that anybody could have done to prevent it. This, said the Court, was a question on which the uninformed judgment of the jury was worthless and expert testimony was essential. Since the defendant's testimony was the only evidence in the case on this point, it must be accepted as true. It was obviously fatal, therefore, to the plaintiff's contention that the patient's death was due to neglect following the second operation.

On behalf of the plaintiff there was offered a medical witness—a surgeon residing in Revere, Mass., but whose practice was largely in Boston. The trial judge refused to permit him to answer certain questions as to the propriety of the treatment in this case and the possibility of other treatment. It cannot be said, said the Court, as a matter of law that there was error in these rulings. This physician was practicing in Boston. Since a person who holds himself out as practicing a particular profession is required only to possess the knowledge and to exercise the care and skill of the ordinary practitioner of that profession in the same place or in similar localities, the opinion of a Boston physician as to what the defendant practicing in the small town of Rochester might or ought to have done was not receivable.

The judgment in favor of the defendant was accordingly affirmed.—*Michael v. Roberts, 23 A. (2d) 361 (N. H., 1941).*

Society Proceedings

COMING MEETINGS

Alabama, Medical Association of the State of, Montgomery, Apr. 21-23. Dr. D. L. Cannon, 519 Dexter Avenue, Montgomery, Secretary.

American Association of Anatomists, New York, April 1-3. Dr. Eliot R. Clark, Dept. of Anatomy, University of Pennsylvania School of Medicine, Philadelphia, Secretary.

American Association of Industrial Physicians and Surgeons, Cincinnati, Apr. 13-17. Dr. Edward C. Holmblad, 28 East Jackson Blvd., Chicago, Managing Director.

American Association of Pathologists and Bacteriologists, St. Louis, April 2-3. Dr. Howard T. Karsner, 2085 Adelbert Rd., Cleveland, Secretary.

American College of Physicians, St. Paul, Apr. 20-24. Mr. E. R. Loveland, 4200 Pine St., Philadelphia, Executive Secretary.

American Federation for Clinical Research, Minneapolis, Apr. 20-21. Dr. Thomas M. Durant, 3401 North Broad St., Philadelphia, Secretary.

American Pediatric Society, Sky Top, Pa., Apr. 30-May 2. Dr. Hugh McCulloch, 325 North Euclid Ave., St. Louis, Secretary.

American Physiological Society, Boston, March 30-April 4. Dr. Carl J. Wiggers, 2109 Adelbert Rd., Cleveland, Secretary.

American Society for Experimental Pathology, Boston, April 1-3. Dr. Harry P. Smith, Medical Laboratory Bldg., Iowa City, Secretary.

American Society for Pharmacology and Experimental Therapeutics, Boston, March 31-April 4. Dr. Raymond N. Bieter, University of Minnesota Medical School, Minneapolis, Secretary.

American Society of Biological Chemists, Boston, Apr. 7. Dr. A. K. Balls, Bureau of Agricultural and Engineering Chemistry, Washington, D. C., Secretary.

American Surgical Association, New Orleans, Apr. 6-8. Dr. Charles G. Mixter, 319 Longwood Ave., Boston, Secretary.

Arkansas Medical Society, Hot Springs National Park, Apr. 27-29. Dr. W. R. Brooksher, 602 Garrison Ave., Fort Smith, Secretary.

Federation of American Societies for Experimental Biology, Boston, March 31-April 4. Dr. D. R. Hooker, 19 West Chase St., Baltimore, Secretary.

Florida Medical Association, Palm Beach, Apr. 13-15. Dr. Shaler Richardson, 111 West Adams St., Jacksonville, Secretary.

Georgia, Medical Association of, Augusta, Apr. 28-May 1. Dr. E. D. Shanks, 478 Peachtree St. N.E., Atlanta, Secretary.

Iowa State Medical Society, Des Moines, Apr. 15-17. Dr. Robert L. Parker, 3510 Sixth Ave., Des Moines, Secretary.

Louisiana State Medical Society, New Orleans, Apr. 27-29. Dr. P. T. Talbot, 1430 Tulane Ave., New Orleans, Secretary.

Maryland, Medical and Chirurgical Faculty of, Baltimore, Apr. 28-30. Dr. Richard T. Shackelford, 1211 Cathedral St., Baltimore, Secretary.

Missouri State Medical Association, Kansas City, Apr. 27-29. Mr. E. H. Bartelsmeyer, 634 North Grand Blvd., St. Louis, Executive Secretary.

New Jersey, Medical Society of, Atlantic City, Apr. 21-23. Dr. Alfred Stahl, 55 Lincoln Park, Newark, Secretary.

New York, Medical Society of the State of, New York, Apr. 27-30. Dr. Peter Irving, 292 Madison Ave., New York, Secretary.

Ohio State Medical Association, Columbus, Apri.28-30. Mr. C. S. Nelson, 79 East State St., Columbus, Executive Secretary.

Oklahoma State Medical Association, Tulsa, Apr. 29-May 1. Mr. R. H. Graham, 210 Plaza Court Bldg., Oklahoma City, Executive Secretary.

Tennessee State Medical Association, Memphis, Apr. 14-16. Dr. H. H. Shoulders, 706 Church St., Nashville, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1932 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

22:583-718 (Nov.) 1941

Pernio: Vascular Disease. Teresa McGovern and I. S. Wright, with collaboration of E. Kruger, New York.—p. 583.

Incidence of Types of Heart Disease Among 30,265 Autopsies, with Special Reference to Age and Sex. B. J. Clawson, Minneapolis.—p. 607.

Normal Electrocardiogram: I. Analysis of Extremity Derivations from 100 Normal Persons Whose Ages Ranged from Thirty to Fifty Years. K. Larsen, Copenhagen, Denmark, and T. Skúlason, Reykjavik, Iceland.—p. 625.

Id.: II. Analysis of Precordial Derivations *d* and *s* from 100 Normal Persons Whose Ages Ranged from Thirty to Fifty Years. T. Skúlason, Reykjavik, Iceland, and K. Larsen, Copenhagen, Denmark.—p. 645.

Significance of Tensility of Aorta as Index of Aging Process in Animal Body. Jean Hume Nelbach and L. P. Herrington, New Haven, Conn.—p. 661.

Digitalis and Normal Work Electrocardiogram. I. M. Liebow and H. Feil, Cleveland.—p. 683.

Myocardial Necrosis in Diphtheria, with General Review of Lesions of Myocardium in Diphtheria. K. Y. Ch'in and C. H. Huang, Peiping, China.—p. 690.

American Journal of Diseases of Children, Chicago

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*Level of Vitamin A in Blood as Index of Vitamin A Deficiency in Infants and Children. J. M. Lewis, O. Bodansky and C. Haig, New York.—p. 1129.

Physical and Chemical Properties of Sputum: II. Influence of Drugs, Steam, Carbon Dioxide and Oxygen. F. P. Basch, P. Holinger and H. G. Poncher, Chicago.—p. 1149.

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Prevention of Dental Caries by Massive Doses of Vitamin D. R. H. Brodsky, B. Schick and H. Vollmer, New York.—p. 1183.

Hematologic Standards for Healthy Newborn Infants: Erythrocyte Count, Hemoglobin Content, Cell Volume, Color Index, Volume Index and Saturation Index. E. G. Chuinard, E. E. Osgood and Dorothy M. Ellis, Portland, Ore.—p. 1188.

Tuberculin Test: Comparative Results of Intradermal and Patch Test for 1,000 Patients. H. A. Reisman, Jamaica, N. Y., and M. Grozin, Flushing, N. Y.—p. 1197.

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*Combined Cod Liver Oil and Liquid Petrolatum Pneumonia in Child. L. Kaplan, Chicago.—p. 1217.

Coarctation of Aorta in Childhood: Report of Two Cases in Which Diagnosis Was Confirmed by Intravenous Injection of Diodrast. S. Blumenthal, New York, and D. B. Davis, Los Angeles.—p. 1224.

Sirenomelian Monster (Sympus): Anatomic Presentation. H. P. Newbill, New Orleans.—p. 1233.

*Renal Hypertension in Children: Clinicopathologic Studies. S. T. Killian and J. K. Calvin, Chicago.—p. 1242.

Level of Vitamin A in Blood.—Lewis and his associates gave 144 infants diets containing varying amounts of vitamin A and determined the relation of the intake to the level in the blood and to dark adaptation. The ages of the infants varied from 3 weeks to 18 months. They were residing in a home for child care. Determinations were also carried out on 157 children, 6 to 12 years of age, in the children's medical division of Bellevue Hospital. Nineteen of these children (normal) were admitted for a minor cutaneous ailment, 118 because of various disorders (infection of the upper respiratory tract, rheumatic fever, dysentery, asthma, renal calculus, glomerulonephritis, erysipelas, sickle cell anemia and Hodgkin's disease) and 20 because of fever. The average concentration of vitamin A in the blood for the three groups was, respectively, 117 units per hundred cubic centimeters for the normal, 89 for the afebrile and 44 for the febrile group. None of the normal children had high dark adaptation thresholds, only 1 of the 118 children showed poor dark adaptation and 4 of the 20 children with fever had poor dark adaptation. The lowest level of the vitamin in the blood in the 144 normal infants was 45 U. S. P. units per hundred cubic centimeters. Values below this level were obtained for infants given diets devoid of vitamin A and for those with disorders affecting the absorption of fat. A low level of vitamin A in the blood was associated with poor dark adaptation and with low hepatic storage of the vitamin. The observations show that a low level of vitamin A in the blood indicates a vitamin A deficiency. The daily administration of 17,000 units of vitamin A to infants during the first six months of life increased the vitamin A content of the blood. However, no appreciable effect on the level was noted when infants 6 to 18 months of age were given the vitamin daily for one to five months. To determine the effect of vitamin A concentrates on the level of the vitamin in the blood in febrile diseases 8 children 6 months to 8 years of age were given 17,000 to 120,000 units of the vitamin. In 7 there was a rise in the level of the vitamin in the blood in twenty-four hours, and in 6 the vitamin A content became normal in twenty-four to forty-eight hours. The average level of the vitamin was 41 units prior to the administration of the vitamin and 83 units after it had been given. Of the 118 afebrile children 22 had a low concentration of vitamin A but normal dark adaptation. This suggests that the level of vitamin A in the blood may be a more sensitive indicator of vitamin A deficiency than the dark adaptation test. However, occasionally a normal level of the vitamin in the blood may be observed when abnormal dark adaptation exists. To investigate fully the vitamin A status the dark adaptation test and determination of the level of vitamin A in the blood should be carried out whenever possible.

Lipid Pneumonia.—Kaplan reports an instance of pneumonia caused by cod liver oil and liquid petrolatum. After the death of the patient, a Negro boy aged 17 months, the two oils were identified by a histochemical method utilizing sudan IV, nile blue sulfate, osmic acid and the Ziehl-Neelsen stain. Microscopic study of the lungs revealed the typical structure of acute and chronic interstitial lipid pneumonia. The oil was found both free and in large macrophages. By the tinctorial methods one oily substance was found as intracellular droplets in the older perihilar lesions. It stained orange red with sudan IV, blue with nile blue sulfate, black with osmic acid and reddish purple with the Ziehl-Neelsen stain. The second oil was diffused in all lobes and made up the bulk of the intrapulmonary oil. It stained yellow orange with sudan IV and pink with nile blue sulfate but did not stain with osmic acid or the Ziehl-Neelsen stain. Much of this oil was found extracellularly, indicating recent administration. The conclusion was that the pulmonary condition was a combination of chronic cod liver oil pneumonia and recent liquid petrolatum or iodized poppyseed oil pneumonia. The boy's history revealed that cod liver oil had been administered for fourteen months but that it had not been given during the three months before death. During the patient's last hospitalization 1½ ounces (45 cc.) of liquid petrolatum had been given daily for twenty-seven days for persistent constipation. The child's death, caused by severe acute hemorrhagic bronchopneumonia, was precipitated by the aspiration of the liquid petrolatum. If the histochemical method had not been employed the case probably would have been recorded as one of bronchopneumonia superimposed on cod liver oil aspiration pneumonia.

Renal Hypertension.—Killian and Calvin present 6 cases of persistent hypertension in children 4½ to 14 years of age admitted to the Michael Reese Hospital between 1930 and 1941. One or both kidneys of the children were obtained for study. Four patients came to necropsy, and 2 underwent unilateral nephrectomy and were alive at the time of the report. The persistence of the hypertension was established by frequent study of the blood pressure. During the eleven years of the study necropsy was performed on 3 children with subacute or chronic

glomerulonephritis. Elevated blood pressure was present in each of them. Chronic bilateral pyelonephritis was present in 1 in addition to the glomerulonephritis. Although chronic glomerulonephritis is usually accompanied by hypertension, it is a relatively less frequent cause of hypertension in children than was heretofore assumed. In the 6 children with renal hypertension the diagnosis was as follows: congenital unilateral hypoplasia of the kidney with nephrosclerosis, chronic bilateral pyelonephritis with contraction of the kidneys, chronic bilateral pyelonephritis with arteriolonecrosis, bilateral hydronephrosis with chronic pyelonephritis, traumatic rupture of a hydronephrotic kidney and subacute glomerulonephritis with arteriolonecrosis. The interference with the renal vascular supply which was observed anatomically could have been responsible for the hypertension in each instance. In most of the children the disease might have responded to urologic management if the hypertension had been detected before irreversible damage had occurred or if the renal condition had been diagnosed before the hypertension became manifest. The persistent hypertension in the children whose kidneys were examined pathologically was usually of renal origin. Persistent hypertension in children is evidently more common than has been appreciated.

American Journal of Medical Sciences, Philadelphia

202:781-928 (Dec.) 1941

Acetylphenylhydrazine Anemia: I. Mechanism of Erythrocyte Destruction and Regeneration. W. O. Cruz, Rochester, N. Y.—p. 781.
*Results of Chemotherapy in Subacute Bacterial Endocarditis. H. Field Jr., Ann Arbor, Mich.; S. W. Hoobler, Boston, and N. L. Avery Jr., Ann Arbor, Mich.—p. 798.
*Treatment of Tularemia with Acriflavine. F. L. Loria, New Orleans. —p. 803.
*Local Treatment of Pyogenic Cutaneous Infections with Sulfathiazole in Emulsion Base. D. M. Pillsbury, Virgene Schirer Wammock, C. S. Livingood and Anna C. Nichols, Philadelphia.—p. 808.
Causative Relationship of Dermatophytosis to Thromboangiitis Obliterans. M. Naide, Philadelphia.—p. 822.
Vitamin A and Ascorbic Acid in Pulmonary Tuberculosis: Determination in Plasma by Photoelectric Colorimeter. H. R. Getz and T. A. Koerner, Philadelphia.—p. 831.
Experimental Hypoprothrombinemia. J. E. Rhoads, R. Warren and Lillian M. Panzer, Philadelphia.—p. 847.
Relationship of Hypoalbuminemia to Edema of Malaria. I. Kopp and H. C. Solomon, Boston.—p. 861.
Significance of Target Cells in Anemia. M. G. Behrod, Miami Beach, Fla.—p. 869.
*Staphylococcic Meningitis Treated with Asparagin Bacteriophage: Two Cases. P. S. MacNeal, Philadelphia, and D. B. Foster, Ann Arbor, Mich.—p. 874.
Note on Localized Lipid Atrophy in Diabetes. Z. T. Wirtschafter and E. D. Schwartz, Cleveland.—p. 880.

Chemotherapy in Subacute Bacterial Endocarditis.—Field and his associates report on the treatment of 36 patients with subacute bacterial endocarditis who received sulfanilamide and/or one of its derivatives for more than one week. There was 1 recovery. All the patients received chemotherapy for more than two weeks before death. Three patients had a complete remission of fever, with repeatedly negative blood cultures for eighteen days, nineteen days and two months, respectively, before death. One of these, with cerebral hemorrhage, was 1 of 5 given heparin continuously. The other 2 relapsed and died in spite of continued chemotherapy. The other 4 patients receiving a continuous intravenous infusion of heparin recovered. The experience warrants persistence in the accumulation of data concerning the different adjuncts to chemotherapy and the selection of a sulfanilamide derivative on the basis of bacteriostasis, demonstrable in vitro, for the strain of organism obtained from the individual patient. The authors state that they have not obtained, even temporarily, sterilization of the blood as frequently as has been reported by most other workers. It seems probable that chemotherapy should be continued for a long time, in most cases, in order to destroy all of the organisms in the vegetations.

Acriflavine Treatment of Tularemia.—Loria treated with acriflavine 1 patient with acute and 2 with chronic tularemia. The results, in his opinion, justify further investigation to determine the true value of the drug. Each of his 3 patients has been observed from time to time; each is well, has gained weight, feels fine and is back at work. The administration of acriflavine was followed by a definite clinical improvement. In the first patient the fever definitely declined after the use of the drug; the fever of the other 2—although it tended to lessen—did not appear to be as definitely affected. The disease of these 2 patients was chronic when diagnosed by the author; the patients sought relief from a recrudescent attack. No disagreeable reactions followed the use of the drug. The author feels that acriflavine probably acted as a bacteriostat, inhibiting the growth of the organism sufficiently to give the host time to increase the antibodies to the point of overcoming the infection. The body defense was not definite until acriflavine was administered.

Sulfathiazole for Pyogenic Cutaneous Infections.—Pillsbury and his collaborators used sulfathiazole locally in the treatment of 190 patients with cutaneous pyogenic infections. An attempt was made to determine the effectiveness of such therapy, the most efficient vehicle for the local application of the drug, the evidence of local or general toxicity incident to the therapy and its effect on the bacteria found in cutaneous pyogenic lesions. The vehicles tried were grease, a "vanishing" stearate, pectin and an oil in water emulsion. It was assumed that if the emulsion type base was to be regarded as 90 per cent efficient the effectiveness of the stearate base could be placed at approximately 70 per cent and that of the grease base at 50 per cent or less. Experience with pectin was limited. Rapidity of action on the infection was the first criterion. The frequency of application necessary, the subjective sensations of the patient, washability and apparent penetration under crusts and débris to the site of infection were secondary considerations. Sulfathiazole in an oil in water emulsion proved effective for the treatment of primary superficial infections of the skin, including staphylococcic or streptococcic impetigo, infectious eczematoid dermatitis, Bockhart's follicular impetigo and superficial ecthyma. It was equally effective for acute secondary infection, pyogenic complications of fungous infection and of dermatitis venenata. Sulfathiazole ointment was useful for the treatment of chronic deep ulcers of the skin and the subcutaneous tissue. There was no evidence of absorption of sulfathiazole and no local or general toxic reactions. Superficial infections from which streptococci were recovered responded more rapidly and completely than those yielding staphylococci on culture. Twelve of 28 patients with infections previously resistant to other types of therapy were cured when hemolytic streptococci were the sole or the predominant organisms. When the predominant organism revealed by the culture was the staphylococcus only 4 of 26 patients were cured and 10 were unimproved.

Staphylococcic Meningitis.—MacNeal and Foster reviewed records of 17 patients with bacteriologically proved Staphylococcus aureus meningitis encountered at the Pennsylvania Hospital from 1925 through 1940. One patient, given massive doses of staphylococcus antitoxin (320,000 units) and sulfapyridine by mouth until the blood level reached 8 mg. per hundred cubic centimeters, was discharged as cured; later investigation, however, revealed that he had had a relapse and died of the infection. The mortality for the 17 patients was 100 per cent. The fact that there are only 15 recorded recoveries prompts the authors to describe the treatment with asparagin bacteriophage of 2 patients with the disease and to add the recovery of 1 of them to the list. The bacteriophage was given full strength intravenously, but for intrathecal injection it was diluted 1:4 with a 0.4 per cent solution of sodium chloride to make the resulting solution hypotonic. The patient, a white man aged 41, originally had been admitted to the hospital for malarial hyperpyrexia treatment of neurosyphilis. The following day a diagnostic lumbar puncture was performed, and within four hours the patient suffered a shaking chill with a rise in temperature to 104 F. The following morning nuchal rigidity and Kernig's sign were present. Culture of the spinal fluid at this time revealed a profuse growth of Staphylococcus aureus. Bacteriophage therapy by the intravenous and the intrathecal routes was begun at once, and the patient was discharged as cured thirty days after admission. The patient had been given 395 cc. of bacteriophage intravenously and 154 cc. intrathecally. Two months after the bout of fever due to the meningitis he returned to the hospital feeling well and 20 pounds (9 Kg.) heavier. Malarial therapy was subsequently administered without mishap.

American J. Obstetrics and Gynecology, St. Louis

42:925-1118 (Dec.) 1941. **Partial Index**

*Role of Isoimmunization in Pathogenesis of Erythroblastosis Fetalis. P. Levine, Newark, N. J.; L. Burnham, Englewood, N. J.; E. M. Katzin, Newark, N. J., and P. Vogel, New York.—p. 925.
Clinical Application of Roentgen Pelvimetry and Study of Results in 1,100 White Women. H. Thoms, New Haven, Conn.—p. 957.
Extracellular Water in Late Pregnancy and Its Relation to Development of Toxemia. L. C. Chesley and Elizabeth R. Chesley, Jersey City, N. J.—p. 976.
Significance of Fetal Environmental Differences. L. W. Sontag, Yellow Springs, Ohio.—p. 996.
Complications of Irradiation Treatment of Carcinoma of Cervix. W. G. Cosbie, Toronto, Canada.—p. 1003.
Anhydrohydroxy Progesterone in Threatened Interruptions of Pregnancy. S. D. Soule, St. Louis.—p. 1009.
Oral Therapy with Pregneninolone in Functional Uterine Bleeding. H. Wiesbader, New York.—p. 1013.
Postabortal Tetanus: Review of Literature and Report of Fourteen Additional Cases. B. B. Weinstein and W. D. Beacham, New Orleans.—p. 1031.
*Endometritis and Tubal Ectopic Pregnancy. W. Schiller and Ruth B. Balkin, Chicago.—p. 1041.
Arrhenoblastoma of Ovary. A. E. Kanter and A. B. Ragins, Chicago. —p. 1061.
Fibrosarcoma of Buttock Associated with Pregnancy. L. P. Kirtz and M. D. Pareira, St. Louis.—p. 1066.
Basal Cell Carcinoma of Vulva. W. Berman, St. Louis.—p. 1070.

Isoimmunization in Fetal Erythroblastosis.—Levine and his collaborators studied the blood of 153 mothers who delivered 1 or more infants with fetal hydrops, icterus gravis or anemia of the newborn. Statistical data on the Rh (Rhesus) factor in the blood of the 153 mothers reveal an incidence of about 90 per cent Rh— reactions in contrast to 15 per cent Rh— reactions in the random population. This striking difference in the incidence of the Rh factor in the two groups of mothers supports the concept of isoimmunization in the mothers of erythroblastic infants. Test on 89 fathers and on 76 infants with fetal erythroblastosis show, on the basis of the isoimmunization theory, that the affected infants and the husbands of the series of Rh— mothers are exclusively Rh+. In 93 per cent of the infants investigated fetal erythroblastosis resulted from the isoimmunization of the Rh— mother by the Rh factor in the erythrocytes of the fetus. In the remaining infants, blood factors other than Rh were responsible for the isoimmunization. Agglutination tests for the Rh factor indicate that a combination of an Rh— mother, an Rh+ father and an affected infant can be used as a laboratory test to support a diagnosis of fetal erythroblastosis and to distinguish between mild, atypical or borderline instances of the condition. Of prime importance is the Rh factor in the fetal blood, which is transmitted as a dominant mendelian gene from the father. The pathologic manifestations of fetal erythroblastosis are produced by the intrauterine action of maternal immune agglutinins on the susceptible erythrocytes of the fetus. It is probable that isoimmunization is also the cause of some habitual abortions and stillbirths. Fetal blood in one form or another probably penetrates the villus in sufficient quantity to induce immunization in the mother. Intragroup transfusion accidents associated with pregnancy can now be prevented by the use of Rh— blood donors and by means of a modified cross matching test.

Endometritis and Tubal Pregnancy.—Schiller and Balkin point out that endometritis under special conditions apparently does not prevent the ascent of the spermatozoa, which may reach the tube and fertilize an ovum if one is present in the lumen. Precocious embedding of the fertilized ovum, leading to a tubal pregnancy, may then occur. Such cases are rare but deserve mention as they support the experimental observation that the migration of spermatozoa is not prevented by a medium of purulent inflammation. The authors report 2 cases in which a tubal ectopic pregnancy and 1 severe endometritis coexisted. Physiologically, in tubal ectopic pregnancy a decidual reaction of the endometrium analogous to the decidual transformation of the endometrium in intrauterine pregnancy is observed. This decidua is cast off after the rupture or abortion of the ectopic pregnancy, that is, when contact between placenta and maternal tissue is severed. In their 2 cases the authors observed no actual decidual reaction of the endometrium. The few foci of decidual reaction in the first case were invaded by chorionic cells. This proves that they were remnants of the previous intrauterine pregnancy. The absence of a decidual response to the ectopic pregnancy can be explained by the endometritis which paralyzes the cytogenic cells and prevents them from responding normally to the hormones of pregnancy. Similarly, in nonspecific generalized endometritis, the phases of the menstrual cycle generally are suppressed. Even in the premenstrual phase tortuous and secreting glands usually are not to be seen in an inflamed endometrium. In the first case the chorionic cells prove that the decidua originated from a previous intrauterine pregnancy and not from the present ectopic one.

American Journal of Tropical Medicine, Baltimore

21:717-812 (Nov.) 1941

Studies on Protein Tyrosine Reaction as Diagnostic Test for Malaria. J. C. Swartzwelder and C. C. Adams, New Orleans.—p. 717.
Distribution and Control of Schistosome Dermatitis in Wisconsin and Michigan. D. B. McMullen, and S. Brackett, Chapel Hill, N. C.—p. 725.
General Actions, Toxicity and Clinical Effects in Amebiasis of Kosam, an Oriental Amebicide. W. C. Kuzell, W. B. Layton, W. D. Frick and W. C. Cutting, San Francisco.—p. 731.
Malaria Reconnaissance of Province of Camaguey in Cuba. H. P. Carr, Havana, Cuba; J. F. Meléndez and A. F. Meléndez.—p. 739.
Comparative Susceptibility of Two Strains of Anopheles Quadrimaculatus to Infection with Human Malaria Parasites. M. F. Boyd, Tallahassee, Fla.—p. 751.
Strains of Anopheles Quadrimaculatus: Inheritance of Color Patterns in Larvae of Anopheles Quadrimaculatus. L. T. Coggeshall, New York.—p. 755.
Surface Tension of Water in Relation to Behavior of Anopheles Larvae. P. F. Russell, Nilgiri, Madras Presidency, India, and T. R. Rao.—p. 767.
Anopheles Pseudopunctipennis, Theobald, Vector of Malaria in Mexico. L. Vargas, G. Casis S., and W. C. Earle, Champaign, Ill.—p. 779.
Are Experimental Data of Therapeutic Malaria Applicable to Conditions Obtaining in Nature? C. W. F. Winckel, Amsterdam, Holland. —p. 789.
Atabrine Retardation of Schizogony in Plasmodium Cathemerium Infected Canaries. H. Beckman, Milwaukee.—p. 795.

Annals of Surgery, Philadelphia

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*Treatment of Cervical Metastatic Cancer. H. Martin, New York.—p. 972.
Pseudogastritis of Operative Origin. G. B. Sanders and P. M. Mecray, Philadelphia.—p. 986.
Rupture of Stomach Following Ingestion of Sodium Bicarbonate. W. T. Lemmon and G. W. Paschal Jr., Philadelphia.—p. 997.
Preliminary Colostomy in Management of Gastrocolic and Gastrojejunocolic Fistulas. C. Mathewson Jr., San Francisco.—p. 1004.
Surgical Management of Fecal Fistulas. C. W. Mayo and C. P. Schlicke, Rochester, Minn.—p. 1011.
*Liver Glycogen and Lipid Concentrations Following Intravenous Glucose Administration and Diet in Dog and Man in Presence of Liver Damage. I. S. Ravdin, H. M. Vars, Elizabeth Thorogood, J. Schultz and J. Johnson, Philadelphia.—p. 1018.
Torsion of Great Omentum: Report of Two Cases. P. J. Lipsett, Oakland, Calif.—p. 1026.
Right Paraduodenal Hernia. H. D. Cogswell and C. A. Thomas, Whiting, Ind.—p. 1035.
Management of Varicose Veins of Lower Extremities. W. W. Heyerdale and L. K. Stalker, Rochester, Minn.—p. 1042.
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Active Immunization Against Tetanus. H. Gold, Chester, Pa.—p. 1060.
*Influence of Temperature on Wounds. B. Brooks and G. Duncan, Nashville, Tenn.—p. 1069.
Regeneration of Epiphysial Cartilage: Experimental Study. S. W. Banks and E. L. Compere, Chicago.—p. 1076.
*Infusions of Blood and Other Fluids via Bone Marrow in Traumatic Shock and Other Forms of Peripheral Circulatory Failure. L. M. Tocantins, J. F. O'Neill and A. H. Price, Philadelphia.—p. 1085.

Cervical Metastatic Cancer.—Martin believes that no single method of treatment is indicated for cervical carcinomatous metastasis and that often a combination of surgical intervention and irradiation is better than either alone. Although closely related, the management of the primary lesion and that of the cervical metastasis should be considered separately. The hypothetic limit of the value of prophylactic dissection of nodes of the neck is shown by the fact that of 128 consecutive patients with determinate cancer of the lip with no metastasis on admission, whose primary lesion was controlled for at least five years, metastasis developed later in only 4. Therefore, prophylactic dissection for the group could not have had even a theoretical value in 125 patients, whereas under the higher reported mortality rates following such dissection more than 10 per cent would have died of postoperative complications, about four times the number which the procedure could possibly have cured. In any event it probably would not have been worth while to perform one hundred and twenty-eight dissections to anticipate metastasis in 3 patients, when these 3 were cured by subsequent treatment. The trend is similar in the treatment of cancer of

the tongue and of the cheek. It appears that only about one in thirty-three prophylactic dissections for cancer of the lip can be of value, one in six for cancer of the cheek and one in eight for cancer of the tongue. As for prophylactic irradiation, it should not be assumed that one or two skin erythema doses are capable of sterilizing an impalpable focus (the actual existence of which cannot be proved) simply because the patient survives and metastasis does not develop subsequently. Theoretical and statistical evidence fails to provide any justification for prophylactic treatment of intraoral and pharyngeal cancer. Therefore, treatment should be administered only if and when the cervical nodes are involved. The treatment for clinically demonstrable cervical metastasis should be based on the clinical features of the given case rather than on any preference for a particular method. Dissection of nodes of the neck is usually suitable for squamous carcinoma of the lip of grade 1 or 2, while the highly malignant, rapidly progressing anaplastic growths of the base of the tongue or of the nasopharynx which metastasize early, bilaterally and widely throughout the neck respond favorably to irradiation. Irradiation and surgical intervention may be effectively combined during dissection of cervical nodes when a metastatic node thought to be operable infiltrates beyond its capsule into a structure which cannot be excised widely. The prognosis of cervical metastatic cancer is not hopeless. The efficacy of dissection of affected cervical nodes in 70 selected cases of early, operable and microscopically proved cancer is proved by the fact that 26 per cent of the affected patients have survived for more than five years. The data of the Memorial Hospital show that 46 patients with microscopically proved cervical metastasis treated by irradiation alone have survived for five years or more.

Repair of Hepatic Damage.—Ravdin and his associates present evidence obtained from experiments on dogs that even if glycogen storage is useful in protecting the liver from injury amounts comparable to those commonly used in man cannot be maintained over a long time by intravenous dextrose therapy. The data on man demonstrate that even in the presence of extensive injury glycogen can be deposited in the liver and low concentrations of hepatic lipid can be obtained. Specimens of liver from patients undergoing operations under spinal anesthesia for disease of the biliary tract were obtained without affecting the course of their convalescence. The data support the concept that the amount of glycogen present in the liver at any given period depends on the amount of carbohydrate or carbohydrate-forming substances available to the subject. If there is any virtue in obtaining a high concentration of hepatic glycogen this can be obtained only by supplying a sufficient number of calories during therapy. Unless more calories are provided by diet or intravenous therapy than are necessary for the energy requirements of the subject glycogen or protein will not be laid down in the liver. Such provision is not possible by any method of intravenous therapy now available. The loss of weight which nearly all such subjects experience is an expression of the extent to which the intake of food has failed to meet the energy requirements. Not only does adequate protein in the diet protect the liver from hepatotoxic agents through some inherent properties of the foodstuff itself, but protein is more efficient, in the presence of ductal obstruction, in reducing the concentration of hepatic lipid than is carbohydrate. If repair is to be facilitated protein must be available, for regeneration cannot readily take place on carbohydrate alone, especially when the protein stores of the body have been depleted by undernutrition. Only by a fuller knowledge of the energy requirements of man, of the foodstuffs essential to meet these and of the part that they may play in conditioning injury and promoting repair can patients with hepatic injury be satisfactorily prepared for operation and convalescence.

Influence of Temperature on Wounds.—Brooks and Duncan determined the effect that temperature had on the healing of experimental wounds in dogs. Three pairs of symmetrical points on the backs of the dogs were chosen. Two of the points were subjected to the application of heat and two to the application of cold, and two were not influenced by either application. The experiments suggest that it is doubtful whether it is wise to inhibit an inflammatory reaction by the application of cold or of heat to the extremities of a patient in surgical shock. The conditions are natural responses, and efforts to reverse normal physiologic processes bring to mind the discarded fever-reducing drugs of the past.

Infusions of Blood via Bone Marrow.—Tocantins and his co-workers report the cases of 4 patients with acute failure of the peripheral circulation which illustrate types of emergency in which the injection of blood, fluids or drugs via the bone marrow may be followed by prompt recovery. The intramedullary route is indicated whenever the direct introduction of fluids into the circulation is not possible because the veins are collapsed. The bone marrow offers the ideal site for the introduction of fluids. Since the marrow veins are surrounded by a rigid envelop, they are less likely to collapse and can probably withstand forcible injection without overdistention and leakage. Under circumstances of collapse the delay involved in locating a vein and in attempts to introduce a needle into it may jeopardize any chance of recovery. When all required equipment is available and ready it is possible to start an intramedullary infusion or injection within three minutes after the skin is penetrated by the needle. In contrast with venesection, no incision of the skin or special after-care of the wound is necessary. The method may be useful for the emergency treatment of mutilated patients or for those with extensive burns of the skin. Since the needle for bone marrow infusion, once in place, remains fixed, continuous infusion is possible while the patient is being transported. Fluid should not be injected unless marrow is clearly obtained by aspiration. Sturdy needles should be used to minimize the danger of bending or breaking.

Archives of Otolaryngology, Chicago

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Tumors of Larynx Other Than Squamous Cell Epithelioma. F. Z. Havens and Edith M. Parkhill, Rochester, Minn.—p. 1113.
Allergic Rhinitis: Analysis of 128 Cases in Which Rhinologist and Allergist Collaborated. F. D. Woodward and O. Swineford, Charlottesville, Va.—p. 1123.
Use of Iodized Oil in Treatment of Infections of Nasal Antrum. H. M. Goodyear, Cincinnati.—p. 1133.
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Review of Allergy for 1940. W. W. Duke, Kansas City, Mo., and E. L. MacQuiddy, Omaha.—p. 1178.

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Further Study of Blastomogenic Substances in Human Body. H. E. Kleinenberg, S. A. Neufach and L. M. Schabad, Leningrad, Soviet Union.—p. 853.
Mechanism of Action of Carcinogenic Substances. L. T. Larionow, Leningrad, Soviet Union.—p. 860.
Artificial Benignancy of Neoplasm: VI. Observations on Oxidative Behavior of Tumors, Artificially Benign Tumors and Homologous Normal Tissues. F. N. Craig, A. M. Bassett and W. T. Salter, Boston.—p. 869.
Influence of Sex of Mice on Acquired Resistance to Transplantable Sarcoma. L. Gross, Cincinnati.—p. 880.
Comparison of X Zone of Adrenal Cortex in Two Inbred Strains of Mice. W. Daughaday, Bar Harbor, Maine.—p. 883.
Genetic Analysis of Induction of Tumors by Methylcholanthrene: III. Local and Remote Induction of Carcinoma of Mammary Gland. L. C. Strong and W. L. Williams, New Haven, Conn.—p. 886.
Effect of Heredity on Susceptibility of Rats to Implants of Induced Sarcoma. J. L. Orbison, H. A. Davenport, F. B. Queen, D. D. Spicer and R. M. Galt, Chicago.—p. 891.
*Relationship of Twins, Teratomas and Ovarian Dermoids. H. W. Edmonds and J. W. Hawkins, Boston.—p. 896.
*Incidence of Carcinoma of Lung. B. Halpert, New Orleans.—p. 900.
*Prevention of Cancer of Vulva. F. J. Taussig, St. Louis.—p. 901.

Relationship of Twins, Teratomas and Ovarian Dermoids.—Edmonds and Hawkins investigated the occurrence of twins in the families of patients with dermoids (childhood teratomas and ovarian dermoids) and in an appropriate number of control families. The material of the study consisted of 50 consecutive patients with ovarian dermoids, 50 hospitalized for twin pregnancy and 40 hospitalized for single pregnancy. The incidence of twins in these families was determined by the presence or absence of twins in blood relatives and the total

number of twin births, the total number of single births and the rate of twin births per thousand total births. There were twins in the families of 28 of the 50 patients with ovarian dermoids, in the families of 30 of the 50 women hospitalized for twin pregnancy and in the families of 16 of the 40 women hospitalized for a single pregnancy. The twin pregnancy rate per thousand births is respectively 22, 18 and 5.3 for patients with dermoids, twin pregnancy and single pregnancy. The incidence of families with twins in a teratoma and in a control series was 83 and 34 per cent, or nineteen of twenty-three and seventeen of fifty families studied. The twin pregnancy rate per thousand births for the teratoma and control series is 21 and 12 for the sibship of the propositus and 18 and 11 for the sibships of parents. It is seen that the twin birth rates obtained for the twin pregnancy series, for the ovarian dermoid series and for the childhood teratoma series are all similar and are all much in excess of the rate for the controls. This evidence suggests that factors of heredity similar to those conditioning twinning may also condition the occurrence of ovarian dermoids and of teratomas of children. It favors the idea that these conditions are at least partly alike in the mode of their formation. This evidence supports a theory that the incidence of teratomatous tumors and of twins may be influenced by the same hereditary factors.

Carcinoma of Lung.—Halpert states that a survey of the records and material of the department of pathology of the University of Chicago disclosed that during the last decade 74 carcinomas of the lung were discovered at necropsy in 2,781 persons more than 1 year old. Carcinoma of the lung was more than half as frequent as carcinoma of the stomach and more frequent than carcinoma of the biliary system and carcinoma of the pancreas together. The data support the assertion that carcinoma of the lung is becoming the second, if not the first, most common malignant neoplasm in the male. Fifty-nine of the 74 carcinomas were in men between 31 and 80 years of age.

Cancer of Vulva.—During the last thirty-five years Taussig has observed 161 cases of cancer of the vulva. The chief important etiologic conditions in cancer of the vulva appear to be urethral caruncle, senile warts, abscess of Bartholin's gland, syphilis and leukoplakia. This points to certain preexisting lesions which tend to become malignant. Removal of these preexisting lesions if done promptly may appreciably lower the incidence of cancer of the vulva.

Journal of Nutrition, Philadelphia

22:541-642 (Dec.) 1941. **Partial Index**

Studies on Nutritional Achromotrichia in Rats. K. Unna, Grace V. Richards and W. L. Sampson, Rahway, N. J.—p. 553.
Inefficacy of Hormones in Nutritional Achromotrichia of Rats. C. W. Mushett and K. Unna, Rahway, N. J.—p. 565.
*Digestibility and Biologic Value of Whole Wheat Breads as Compared with White Bread. J. R. Murlin, Margaret E. Marshall and C. D. Kochakian, Rochester, N. Y.—p. 573.
*Apparent Digestibility of Carbohydrates, Fats and "Indigestible Residue" in Whole Wheat and White Breads. R. R. Sealock, D. H. Basinski and J. R. Murlin, Rochester, N. Y.—p. 589.
Dark Adaptometer and Blood Vitamin A Measurements in North Carolina Nutrition Survey. M. E. Yarbrough and W. J. Dann, Durham, N. C.—p. 597.
Relative Assimilation of Fluorine from Fluorine Bearing Minerals and Food (Tea), and from Water and Food. Margaret Lawrenz and H. H. Mitchell, Urbana, Ill.—p. 621.

Digestibility and Biologic Value of Whole Wheat and White Bread.—Murlin and his associates determined the biologic value of the proteins and their digestibility in 10 men. The results are applicable to the current national problems in nutrition. The diet was planned to supply, as nearly as possible, 80 per cent of the food nitrogen from whole egg and 80 per cent from bread in alternate periods of six days each. Approximately 10 per cent of the nitrogen was contained in butter and cream and 10 per cent in fruits, vegetables and accessories. A rather high fat diet was necessary to supply sufficient energy without excessive bulk or too much sweetness. The average daily intake was 2,914 kilogram calories. Four whole wheat and three white breads were compared. In general, the whole wheat breads gave lower true digestibility values for protein than the white breads but at the same time produced higher biologic values. When the biologic value of egg proteins was taken as 100 per cent the biologic values for the proteins of the four whole wheat breads were: for a whole wheat cereal biscuit, 81.6; for a whole wheat bread containing 5 per cent nonfat milk solids, 77.8; for a "peeled wheat" bread eaten with extra B vitamins, 79.6; for a "peeled wheat" bread made with high vitamin yeast but eaten with no extra vitamins, 81, and for the same bread baked with ordinary yeast and eaten with no extra B vitamins, 77.9. For the white breads the figures were: for one type of lean white bread eaten with the same extra B vitamins as were eaten with the "peeled wheat" bread, 75.3; for a similar lean white bread eaten with no extra B vitamins, 74.6; for white bread containing 5 per cent nonfat milk solids and baked with a high vitamin yeast but eaten with no extra B vitamins, 79.8. The authors point out that the eating of the peeled wheat bread instead of the lean white bread with extra B vitamins would result in a saving of 93,737 kilogram calories, or enough to support the average person (at 2,200 calories a day) for more than forty days. If the average person in the United States who now eats lean white bread were to change to an acceptable whole wheat bread not only would this large saving per capita in calories result but each person would consume the entire B complex of vitamins contained in wheat and more minerals (especially calcium, phosphorus and iron), and his tissues would have the advantages of a biologic value of protein significantly higher than that of lean white bread. These considerations are all important. The country is aware of the importance of better nutrition, and it should become aware of the importance of vital economy in nutrition.

Digestibility of Carbohydrates, Fats and Residue in Bread.—Sealock and his colleagues compared the availability of nutrients in whole wheat, peeled wheat and white bread. One of the chief differences between white and whole wheat bread is the higher content of "indigestible residue" in the latter. The apparent digestibility of carbohydrates varied from 97.6 to 99.8 per cent and of fat from 95.7 to 97.4 per cent. There was no significant difference between the results obtained with white and those with whole wheat bread. The higher "indigestible residue" of whole wheat biscuit and bread did not interfere with the digestion and absorption of carbohydrate and fat. The "indigestible residue" exhibited an apparent digestibility of 29.2 to 76.3 per cent. Although there was considerable variation in the percentage of minerals absorbed, with the exception of the periods when egg and a whole wheat cereal biscuit were consumed, a striking uniformity of mineral intake occurred.

Journal of Pharmacology & Exper. Therap., Baltimore

73:229-362 (Nov.) 1941. **Partial Index**

Respiratory Effects of Morphine, Codeine and Related Substances: Parts VIII to XI. Margaret Sumwalt, H. R. Oswald, C. I. Wright, A. T. Miller and H. A. Lusk.—p. 229.
Changes in Susceptibility to Convulsant Action of Metrazol. J. Sacks and N. M. Glaser, Ann Arbor, Mich.—p. 289.
Actions of Curarizing Preparations in the Human. A. M. Harvey and R. L. Masland, Philadelphia.—p. 304.
Studies on Series of New Triazole Derivatives. R. W. Cunningham, E. J. Fellows and A. E. Livingston, Philadelphia.—p. 312.
Effect of Calcium and Strontium Salts on Action of Sodium Pentobarbital. Versa V. Cole, Philadelphia.—p. 335.
Mode of Action of Sulfonamides: I. Action on Escherichia Coli. H. I. Kohn and J. S. Harris, Durham, N. C.—p. 343.

New England Journal of Medicine, Boston

225:889-928 (Dec. 4) 1941

Why First Aid? A. W. Reggio, Boston.—p. 889.
Cardiovascular Aspects of Aviation Medicine. J. R. Poppen, Washington, D. C.—p. 892.
*Suppurative Pericarditis. R. Adams and H. Polderman, Boston.—p. 897.
Activities of Boston Health Department. G. L. Gately, Boston.—p. 902.
Spontaneous Mediastinal Emphysema. C. W. Styron, Boston.—p. 908.
Ovulation. J. Rock, Brookline, Mass.—p. 910.

Pericarditis.—Adams and Polderman performed pericardiotomy in 3 patients with purulent pneumococcic pericarditis. One of the patients recovered. They believe that for this patient the pericardiotomy was a life-saving procedure but that it probably would have failed without the aid of immune serum, chemotherapy, transfusions and excellent nursing care. In the other 2 patients drainage of 500 cc. of thick pus from 1 and of 400 cc. from the other patient may have resulted in temporary

improvement, but the procedure failed to change the progressive course of the disease. Both patients illustrate the progressive decline of the general condition that often typifies patients with pneumococcic pericarditis, even after drainage, before the advent of chemotherapy and immunotherapy. Four other patients with pneumococcic pericarditis died without operation. Of 9 patients with pericarditis due to Staphylococcus aureus, 3 had an operation and 1 of these recovered. Pericardial drainage, the authors believe, was without question a life-saving procedure for this patient. Although drainage of the pericardial cavity was adequate in the 2 other patients operated on, infection elsewhere was too severe and extensive for recovery to occur. Three patients with streptococcic pericarditis died; operation was not performed in this group. The condition of 1 of these patients illustrates that signs of pericardial effusion can be produced by a small quantity of fluid; only 100 cc. was found at necropsy. Inability of the pericardium to dilate owing to preceding inflammatory fixation in association with empyema was the probable explanation. One patient with an influenza bacillus infection survived after pericardiotomy. The infection in 12 of the 20 patients was preceded by pneumonitis or pneumonia, in 6 by osteomyelitis, in 1 by cholecystitis and in 1 by mastoiditis. In 5 of the patients with staphylococcic pericarditis an abscess was found in the heart muscle; electrocardiographic studies in such patients may be of diagnostic aid.

Oklahoma State Medical Assn. Jour., Oklahoma City

34:511-556 (Dec.) 1941

Thiocyanates in Treatment of Hypertension. W. T. Bynum, Chickasha.—p. 511.
Mental Hygiene in Our Public Schools. F. M. Adams, Vinita.—p. 517.
Diphtheria of Middle Ear. W. F. Keller, Oklahoma City.—p. 519.
Multiple Intestinouterine Fistulas Following Precipitate Labor: Report of Case. G. Penick and J. M. Parrish, Oklahoma City.—p. 521.
Study of Compound Fractures. A. L. Swenson, Oklahoma City.—p. 524.

Philippine Medical Association Journal, Manila

21:481-534 (Oct.) 1941

Some Outstanding Achievements in Malaria Research During Last Twenty Years. C. M. Africa and F. J. Dy, Manila.—p. 481.
Rationale of Popular Uses of Philippine Medicinal Plants. F. Garcia, Manila.—p. 487.
Studies on Spontaneous Pneumothorax. P. Ignacio and A. Gonzales, Kawit.—p. 495.
Noma in Philippines. E. Stransky and L. V. Pecache, Manila.—p. 501.
Rupture of Uterus Incident to Hydrocephalus and Contracted Pelvis. C. V. Bagabaldo and D. A. Garcia, Tacloban.—p. 509.

Psychoanalytic Quarterly, Albany, N. Y.

10:513-708 (Oct.) 1941

Critical Analysis of Elements of Psychic Functions: Part I. C. M. Herold, New York.—p. 513.
Status of Emotions in Palpitation and Extrasystoles with Note on "Effort Syndrome." M. L. Miller and Helen V. McLean, Chicago.—p. 545.
Physiology of Behavior and Choice of Neurosis. T. M. French, Chicago.—p. 561.
Micropsia. L. H. Bartemeier, Detroit.—p. 573.
Successful Treatment of Case of Acute Hysterical Depression by Return Under Hypnosis to Critical Phase of Childhood. M. H. Erickson, Eloise, Mich., and L. S. Kubie, New York.—p. 583.
Predisposition to Anxiety: Part II. Phyllis Greenacre, New York.—p. 610.
Negative Reactions to Christmas. J. Eisenbud, New York.—p. 639.

Public Health Reports, Washington, D. C.

56:2321-2364 (Dec. 5) 1941

Facilities in United States for Special Care of Children with Rheumatic Heart Disease. O. F. Hedley.—p. 2321.
Siphonaptera: Genera Amphalius and Ctenophyllus in North America. W. L. Jellison.—p. 2341.

Southwestern Medicine, El Paso, Texas

25:345-380 (Nov.) 1941

Pneumonia Control in New Mexico (1940-1941). C. H. Douthirt, Santa Fe, N. M.—p. 345.
Common Skin Disease: Dermatitis Venenata and Acne Vulgaris. R. L. Sutton Jr., Kansas City, Mo.—p. 348.
Cutaneous Manifestations of Syphilis. H. D. Newton, San Diego, Calif.—p. 351.
Permission Necropsy: Its Purpose and Problems. O. T. Schultz, Evanston, Ill.—p. 353.
Effects of Electromagnetic Radiations on Flocculation Tests for Syphilis. E. L. Breazeale, Tucson, Ariz.—p. 362.

Surgery, St. Louis

10:861-1042 (Dec.) 1941

Mechanisms of Gastric Secretion. A. C. Ivy, Chicago.—p. 861.
Management of Gastric Resection for "Poor Risk" Patient. H. McCorkle and H. G. Bell, San Francisco.—p. 879.
Hemangioma of Stomach: Review of Literature and Report of Two Cases. C. B. Morton and R. E. Burger, University, Va.—p. 891.
Abscess of Stomach Wall: Report of Case. P. K. Sauer and J. R. Lisa, New York.—p. 899.
*Zinc Peroxide in Treatment of Compound Fractures and Traumatic Amputations: Report of Eighteen Cases. E. J. Pulaski and B. H. Chandlee, Philadelphia.—p. 904.
Treatment of Fractures in Neck of Humerus Without Immobilization. E. O. Geckeler, Philadelphia.—p. 917.
Tibial Epiphysiotomy for Severe Genu Recurvatum. R. Sutherland, Los Angeles, and M. J. Rowe Jr., Long Beach, Calif.—p. 927.
*Blastomycosis of Bone: Review of Sixty-Three Collected Cases of Which Six Recovered. R. R. Jones Jr. and D. S. Martin, Durham, N. C.—p. 931.
*Systemic Blastomycosis: Report of Case with Unusual Immunologic Findings, Well Two Years After Onset. D. S. Martin and R. R. Jones Jr., Durham, N. C.—p. 939.
*Local Sulfanilamide Therapy in Surgical Infections. J. R. Veal and R. G. Klepser, Washington, D. C.—p. 947.
Changes Produced by Sympathectomy in Electrical Resistance of Skin. C. P. Richter and Bettye G. Woodruff, Baltimore.—p. 957.
Nephrolithiasis Due to Infection with Bacillus Proteus. C. D. Creevy, Minneapolis.—p. 971.
Extradural Hemorrhage in Posterior Fossa. C. C. Coleman and J. L. Thomson, Richmond, Va.—p. 985.
Experimental Studies on Alimentary Azotemia: II. Relative Importance of Plasma and Erythrocyte Fractions of Absorbed Blood. H. N. Harkins and C. F. Chunn, Detroit.—p. 991.
Repair of Large Umbilical Hernia. E. Michelson and W. Raffel, Baltimore.—p. 999.

Zinc Peroxide in Treatment of Fractures and Amputations.—Pulaski and Chandlee review recent literature on the treatment of traumatic amputations and compound fractures and present results obtained with zinc peroxide in eighteen such wounds. They suggest that all tissue debrided from open traumatic injuries be cultured aerobically and anaerobically. The eighteen wounds were sustained in street or industrial accidents, and all the patients were seen within three hours after injury. On the patient's arrival in the emergency ward, the wound was covered with several layers of an alcohol dressing and the injured limb was placed in a splint. Tetanus (1,500 units) and gas bacillus (3,500 units) antitoxins were given. Bleeding vessels were clamped. Shock therapy was instituted if indicated and immediate blood grouping for transfusion done. In the operating room, the patient was anesthetized and after the wound had been thoroughly cleansed the compound fracture was reduced. Fragments of bone were retained by internal fixation or by traction with wire. The wound (whether a compound fracture or a traumatic amputation) was then flooded with a freshly prepared suspension of active zinc peroxide in sterile distilled water. All the recesses of the wound were filled. The wound was then covered with cotton soaked in the zinc peroxide suspension, and this in turn was covered with cotton soaked in water and sealed with several layers of fine-meshed gauze impregnated with petrolatum or zinc ointment. The wounds of 13 patients were left open and treated with zinc peroxide; no infection developed. Hemolytic streptococci were cultured from the fragments of debrided tissue from five of the wounds, nonhemolytic anaerobic streptococci from three and Clostridium welchi from two. Staphylococci were present in conjunction with these organisms in every wound. In 1 patient the wound was left open and treated with 10 per cent mercurochrome and compresses of boric acid. An infection yielding hemolytic streptococci developed, but with the change to zinc peroxide applications it cleared rapidly. In 4 patients the wounds were closed after débridement and reduction; each wound became infected. Preliminary culture of material from three of these wounds yielded hemolytic streptococci from one, hemolytic streptococci and an aerobic nonhemolytic streptococcus from one and Bacillus anthracis from one. Cultures were not made of material from the fourth wound. After the wounds were opened and treated with zinc peroxide the infections cleared promptly. There were 3 deaths; 2 were of men more than 70 and were attributed to uncontrollably severe shock and myocardial failure. The third death occurred twenty-four days after the accident and was due to a hemolytic streptococcus, cerebrospinal meningitis and pneumonia. Sulfanilamide and sulfapyridine were not effective. The wounds of all 3 of

these patients were healing at the time of death. In 23 "control" patients with comparable wounds not treated with zinc peroxide the incidence of infection was 21.8 per cent.

Blastomycosis of Bone.—Jones and Martin collected 62 cases of blastomycosis of bone from the literature; 6 of the patients recovered after treatment, 3 were not followed sufficiently long to determine the end result and 53 died of the disease. They summarize the knowledge of this infection and outline certain studies valuable in the diagnosis, prognosis and treatment of the disease. In bone the infection may be localized or diffuse osteomyelitis, periostitis or, if a joint is involved, arthritis. The isolation and identification of Blastomyces dermatitidis from infected secretions or exudates is proof of infection and should always be attempted. However, as examination of tissue and culture are time consuming the authors believe these should be deferred until the patient's allergic reaction has been determined by cutaneous tests and by the complement fixation test they describe. The proportions of material and reagents for the complement fixation test specific for B. dermatitidis are the same as are used for the Wassermann test except that a fungus suspension is substituted for the beef heart antigen. Roentgenograms of the chest should be obtained from all patients suspected of having the infection, as the lungs are the most common port through which the fungus enters. Roentgenograms may also be made of any bone thought to be involved, particularly of the spine of the patient who complains of backache. When multiple osseous lesions exist a roentgen diagnosis of blastomycosis can be suspected. Well localized, sharply defined destructive processes in the metaphyses, when multiple, suggest blastomycosis rather than the other conditions. General hygienic measures are of first therapeutic importance. Bed rest and an adequate diet are essential. Therapy with potassium iodide is best deferred until the diagnosis has been established and the patient's allergic status has been determined, and if the patient is sensitive he should be partially desensitized to Blastomyces before iodide medication or surgical intervention is undertaken. Open drainage of abscesses, curettage of ulcers or sinuses and sequestrectomy may be necessary at times, but they should not be done until partial desensitization has been accomplished and iodides have been administered. When involvement of the bones of the foot and of the ankle is extensive the generalized nature of the infection should be kept in mind and amputation used only as a last resort. Potassium iodide was given to the 6 patients who recovered; 3 received heliotherapy also, 2 were given Blastomyces vaccine and 1 received roentgen therapy. All these additional measures were thought to be beneficial. The prognosis of blastomycosis of bone is poor, especially in persons who have a high titer of complement fixing antibodies.

Systemic Blastomycosis.—Martin and Jones report a case of blastomycosis with an immunologic picture so different from the usual that a radical departure from the usual treatment was necessary. The case is that of a white farmer of 30 admitted to the Duke Hospital. He complained of pain in the left elbow and forearm of six weeks' duration. Eleven weeks before admission to the hospital the patient noticed a small area of tenderness over the left eleventh rib. Three weeks later a small swelling appeared; this was incised by his physician, and a small amount of sterile pus was evacuated. The exposed rib was curetted, and the wound has remained as an indolent cavity. Six weeks before hospitalization a swollen, tender spot developed over the left ulna just distal to the elbow joint. This swelling increased in size for about ten days. Movement of the elbow caused pain. Ten days before hospitalization this area was incised and some necrotic bone was evacuated. The pus from this wound was reported as showing no growth of pyogenic organisms. Both wounds continued to drain, and the elbow remained painful. The patient, with no evidence of hypersensitivity to Blastomyces, did not respond to iodide therapy. During the six weeks that the drug was administered he continued to have a low grade fever and failed to gain significantly in weight, and the local lesion at the elbow became worse. The appearance of the fungus in smears suggested either a different form of the fungus or a peculiar reaction of the host cells to the fungus. A positive Foshay reaction further suggested that the fungus was producing some antigenic substance which may have masked or prevented the development of a cutaneous reaction to the intracutaneous injection of a vaccine or a filtrate of the organism. A severe local reaction around the elbow following the intracutaneous injection of 0.1 cc. of undiluted anti-Blastomyces rabbit serum emphasized that the production of a hypothetic antigenic material was most intense in this area. The apparent benefit following the injection of 2.4 cc. of immune serum, with a complete reversal of the immunologic picture, was interpreted as meaning that this excess material was neutralized by the antibodies in the rabbit serum, allowing the host's cells, aided by iodides, to attack the invading fungi. The observation that the reaction to the complement fixation test became more strongly positive three weeks later suggested that the patient had previously built up a certain resistance to the fungus but that evidences of the resistance were masked by the local production of the soluble antigen. This substance may have prevented local healing and reversed the usual signs of hypersensitivity to the fungus and the presence of serum antibodies. The mild allergy that developed after serum treatment did not seem sufficient to warrant the withdrawal of iodide therapy. The success in the ultimate cure of this patient of maggot therapy was felt to be due entirely to the action of the maggots in removing necrotic tissue and keeping the sinuses open for drainage.

Sulfanilamide Therapy in Surgical Infections.—During the last year Veal and Klepser treated more than three hundred infected wounds (postoperative wound infections, traumatic wounds, infected burns, compound fractures, leg ulcers, decubital ulcers, localized abscesses and carbuncles) by the local implantation of sulfanilamide powder. Cultures were made of material from many of the wounds before local treatment was begun and at intervals during treatment. Biopsies also were made of the edges of the wounds of 70 patients. The wounds were treated by adequate drainage or débridement and the local implantation of sulfanilamide powder. Sufficient powder was used to cover the surface of the wound and to fill all pockets. All types of organisms were affected. If the sulfanilamide was applied daily, the number of bacteria diminished until the wound was practically sterile after five to eight days of treatment. With the reduction in bacteria the amount of exudate decreased. The necrotic odor of some of the wounds vanished immediately. After the bacterial growth and exudate were controlled sulfanilamide was withdrawn. Some wounds remained clean, and healing progressed steadily. In others there was a bacterial regrowth with a return of inflammation requiring the resumption of the daily instillation of the sulfanilamide powder. The resumed therapy controlled the infection, but the granulation tissue appeared dry, anemic and indolent, and healing was retarded. After several trials, the application for a few days of an ointment of 10 per cent sulfanilamide with 2 per cent allantoin in an absorbable glycerinated base caused the tissue to become active and healthy and kept the infection under control. The authors' routine now is as follows: As soon as bacterial growth and the exudate have diminished and the inflammation has subsided, the daily application of powdered sulfanilamide is replaced by the daily application, over the entire lesion, of a thin layer of the sulfanilamide-allantoin ointment covered with a dry gauze dressing. Systemic toxic reactions or the cyanosis seen so frequently after the oral or the parenteral administration of sulfanilamide was not observed in the patients treated locally. However, there was a cumulative rise of the level of sulfanilamide in the blood in certain patients given large daily doses over a long time.

Wisconsin Medical Journal, Madison

40:1013-1128 (Nov.) 1941

Triumphs of Optimism. N. B. Van Etten, New York.—p. 1031.
Anatomic and Physiologic Aids in Neurologic Diagnosis. D. Cleveland, Milwaukee.—p. 1037.
Tuberculosis Case Finding in Industry. O. A. Sander, Milwaukee.—p. 1042.
Sulfanilamide and Its Derivatives in Treatment of Escherichia Coli Septicemia: Report of Case with Recovery. M. L. Carns and R. B. Larsen, Madison.—p. 1046.
Sciatica. V. J. Hittner, Seymour.—p. 1048.
Some Common Everyday Injuries of Knee Joint. K. Speed, Chicago.—p. 1051.
Fractures About Wrist. H. L. Greene, Madison.—p. 1055.
Fractures About Ankle. W. P. Blount, Milwaukee.—p. 1058.
First Aid Treatment of Fractures. H. C. Schumm, Milwaukee.—p. 1061.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Experimental Pathology, London

22:241-292 (Oct.) 1941

Studies on Experimental Goiter: I. Effect of Brassica Seed Diets on Rats. T. H. Kennedy and H. D. Purves.—p. 241.
Id.: II. Changes in Anterior Pituitary of Rat, Produced by Brassica Seed Diet. W. E. Griesbach.—p. 245.
Id.: III. Effect of Goitrogenic Diet on Hypophysectomized Rats. W. E. Griesbach, T. H. Kennedy and H. D. Purves.—p. 249.
Purification of Diphtheria Toxin and Toxoid Made from Tryptic Digest Broths. F. V. Linggood.—p. 255.
Changes in Lung Following Injections of Iodized Oil into Trachea. F. J. S. Gowar and J. R. Gilmour.—p. 262.
Weil-Felix Reaction in Experimental Rat Bite Fever. S. R. Savoor and R. Lewthwaite.—p. 274.

British Journal of Ophthalmology, London

25:553-594 (Dec.) 1941

Cataract Extraction in Refractory Patients and Operative Treatment of Iridodialysis. T. G. W. Parry.—p. 553.
Vitamin B Complex Deficiency as Cause of Retrobulbar Neuritis and Peripheral Neuritis in Chronic Alcoholic and Pipe Smoker. B. Gottlieb.—p. 556.
Monocular Diplopia Occurring in Cases of Squint. E. E. Cass.— p. 565.

Edinburgh Medical Journal

48:713-792 (Nov.) 1941

*Chordoma. W. F. Harvey and E. K. Dawson.—p. 713.
Dietetic Treatment of Gastrointestinal Disease. D. M. Dunlop.—p. 731.
Hypertensions. A. R. Gilchrist.—p. 752.

Chordoma.—Harvey and Dawson report a microscopic study of 14 cases of chordoma and of 5 of doubtful chordoma encountered through examination of 16,000 slides of tumors. The entity is probably more frequent than is realized but is still rare. Chordoma is said to be the only tumor reproducing in its neoplastic proliferation a purely embryonic tissue. Chordomas arise anywhere in the vertebral column, from the region of the spheno-occipital synchondrosis to the tip of the coccyx. Available figures show that most of them arise in the basis cranii and the sacrococcygeal region; that is, at the two ends of the notochord. There is a group of retroperitoneal or sacrococcygeal tumors which clinically and macroscopically resemble chordoma and which microscopically show fields of morphologic identity with chordoma but which at the same time show puzzling fields of glanduliform or organoid epithelial structure. The typical chordoma is translucent, gelatinous and lobulated with areas of hemorrhage. A characteristic feature is the destruction and infiltration of bone. In its more gross microscopic appearance it is a lobulated tumor with solid or partially solid alveolar cell character. The dense fibrous trabecular septums which divide the lobules are not always complete; they carry the nutrient vessels of the tumor, for the tumorous areas of cells are apparently avascular. The mucinous character of the chordoma is the main diagnostic feature. Parts of the tumor, instead of showing the more typical epithelioid cell, may show a compressed fusiform type of cell suggesting sarcoma. Some of the tumors observed by the author, however, showed transition from the epithelioid type of cell to a fusiform cell with no suggestion of sarcoma. The chordomatous "sarcoma" chiefly involves the concepts of a mesodermal origin for the notochord and a microscopic picture of fusiform cells and mitoses. Occasionally the malignant chordoma may adopt a carcinomatous or a sarcomatous character, expressed as chordocarcinoma and chordosarcoma. The benign chordoma and the ecchordosis malformation may be regarded as one and the same type of new growth. In the malignant chordoma many of the generally accepted malignant criteria are frequently absent, but the tumor may show cellularity, pleomorphism and mitoses. Metastasis occurs rarely, and growth, though infiltrating and destroying bone, is slow. Recurrence after excision is invariable, and, even though survival may be long, few if any patients have remained cured after complete removal.

Lancet, London

2:549-586 (Nov. 8) 1941

Renal Lesions in Two Cases of Crush Syndrome. J. S. Dunn, Marjorie Gillespie and J. S. F. Niven.—p. 549.
*Trinitrotoluene Jaundice. R. M. Evans.—p. 552.
*Improved Webster Test for Trinitrotoluene Derivative in Urine. J. Ingham.—p. 554.
Trigeminal Neuralgia: Suggested Basis of Treatment. W. E. Adams and W. Robinson.—p. 555.
Influence of Menstruation on Suspension Stability of Red Cells. R. Greene.—p. 556.
Concentrated Serum in Head Injuries. J. W. A. Turner.—p. 557.
Hemothorax from Leakage of Dissecting Aortic Aneurysm: Survival. F. Post.—p. 558.
Pterygonuchal Infantilism (Turner's Syndrome): Case, with Postmortem Findings. E. P. Sharpey-Schafer.—p. 559.
Cerebrospinal Fever with Low Blood Pressure. J. Sharkey.—p. 560.
Postvaccinal and Measles Encephalomyelitis: Report on Two Cases Which Recovered. A. H. G. Burton and J. H. Weir.—p. 561.
Encephalitis of Unknown Origin. H. A. Palmer.—p. 562.

Trinitrotoluene Jaundice.—Evans observed 7 patients employed in an ordnance filling factory who had toxic jaundice apparently caused by trinitrotoluene. The disorder is not uncommon under the present war conditions, and early diagnosis and treatment are essential. The jaundice occurred within six months of the patients' beginning employment at the factory, and 1 of the 2 patients who died had been in contact with explosives for only three weeks when symptoms appeared. Six of the patients were women; they had no history of toxemia of pregnancy. The jaundice produced a typical orange yellow pigmentation. The associated symptoms were nausea, anorexia and epigastric discomfort. Hepatic enlargement and pyrexia were absent. This fact distinguishes the condition from catarrhal jaundice, with which it may be confused. Necropsy of the patients who died revealed acute yellow atrophy of the liver and hyperplasia of the bone marrow in 1 patient and subacute hepatic necrosis and hyperplasia of the bone marrow in the other (whose death was due to aplastic anemia). Treatment consisted of administering dextrose, insulin and vitamin C and symptomatic measures. Prophylaxis is important, the main measures being protection of the skin, washing, adequate ventilation of factories, a healthy life and a full diet.

Improved Webster Test for Trinitrotoluene in Urine.—Ingham points out that the sensitivity of the Webster test for trinitrotoluene is enhanced and a positive result obtained more frequently when the mixture of urine and sulfuric acid is boiled before ether is added and four times as much urine as Webster recommends is used. With these modifications the test is sensitive to 1 part of trinitrotoluene in 10,000 parts of urine. Anthraquinone derivatives are not excluded, but these are pinker. For the daily examination of workers in factories the technic may be simplified as follows: Two ordinary test tubes (7 by ¾ inch), a Bunsen burner or a spirit lamp, a 20 per cent (by volume) solution of sulfuric acid, ordinary (methylated) ether and a 5 per cent alcoholic solution of potassium hydroxide (freshly prepared) are required. About 10 cc. of urine is placed into one test tube, and the same amount of the sulfuric acid is added; the tube is shaken, and the solution is brought to a boil over the burner; then the tube is cooled thoroughly under the water tap. When it is cold, about 10 cc. of ether is added; the solution is shaken well and allowed to stand until ether floats to the top. Some of the supernatant ether is poured into the other test tube, and about 2 cc. of the potassium hydroxide solution is added. A dirty reddish purple develops at once if trinitrotoluene is present; the tint varies from faint to deep according to the amount of trinitrotoluene present, appears quickly and fades quickly. If trinitrotoluene is not present the resulting and persisting color is light brown.

Medical Journal of Australia, Sydney

2:555-582 (Nov. 15) 1941

Cholelithiasis (Latent and Active). H. C. R. Darling.—p. 555.
Problems in Therapy of Ulcerative Granuloma. K. V. Earle.—p. 563.
Endocrine Causes of Disorders of Menstruation and Bleeding from Non-gravid Uterus. S. D. Meares.—p. 566.
Collapse and Renal Failure. J. W. Tomb.—p. 569.

Schweizerische medizinische Wochenschrift, Basel

71:1085-1108 (Sept. 20) 1941. **Partial Index**

*Primary Tuberculosis of Adults. P. Bernoulli.—p. 1087.
*Problem of Harmless Cleansing of Skin. W. Burckhardt.—p. 1097.
Use of Vitamin B_2 in General Practice. L. Mosonyi.—p. 1098.
First Phase of Evolutive Cycle of Plasmodium in Vertebrates. B. Galli-Valerio.—p. 1099.
So-Called Silicosis (by Talcum) of Dressmakers. L. Carozzi.—p. 1100.

Primary Tuberculosis of Adults.—Bernoulli points out that primary tuberculous infection in adults is not as rare as was formerly assumed. Histories of 3 young soldiers in whom primary tuberculosis took an unfavorable course are presented. The first soldier, aged 21, contracted a cold after four months of active service. He exhibited from then on occasional subfebrile temperatures; six weeks later he had vascular disturbances in the right leg and headaches and a month later died of tuberculous meningitis. Necropsy disclosed a fresh caseous primary focus in the lower left pulmonary lobe, caseous tuberculosis of lymph nodes and a sparse miliary dissemination in several organs. The second young man, aged 22, exhibited influenza-like symptoms a few days after discharge from active service. After an undisturbed interval of seven weeks febrile symptoms recurred, and the patient died within a few weeks with symptoms of tuberculous meningitis. Postmortem examination revealed that a miliary dissemination originated in a fresh caseating tuberculous primary complex in the left lower pulmonary lobe. In the third soldier, aged 21, the onset was also influenza-like. This was followed by progressive, predominantly left sided pulmonary tuberculosis which terminated in death six months later. Necropsy demonstrated a cavernous primary focus in the upper lobe of the left lung, extensive caseous tuberculosis of lymph nodes and tuberculous dissemination in various organs. Primary infection has in these 3 men developed in adult life. It is probable that it took place in the course of military service, although there are no conclusive proofs for this supposition.

Harmless Cleansing of Skin.—Burckhardt discusses the role of alkaline substances in the pathogenesis of eczemas. He reports results of experimental patch tests and observations on patients with eczema which demonstrate that in eczema caused by soaps the offensive substance is not the perfume but always the alkali. This observation, made by investigators in different countries, induced a search for neutral skin cleansers to replace alkaline soaps. The author describes the properties of, the tolerance for and clinical experiences with a skin cleanser the active constituents of which are fat alcohol sulfonates. This substance is effective and harmless. It is helpful in preventing eczema, particularly in persons whose skin is hypersensitive to alkali and whose occupation involves frequent cleansing of the hands.

71:1145-1168 (Oct. 4) 1941

The Youth of Paracelsus. H. Fischer.—p. 1145.
Paracelsus as Physician. C. G. Jung.—p. 1153.
*Particular Indication for Apical Thoracoplasty. G. Rossel.—p. 1158.
Increasing Efficacy of Welfare Work for Tuberculosis Patients. R. Kipfer.—p. 1161.

Apical Thoracoplasty.—Rossel stresses that an artificial pneumothorax is of only limited duration. Efforts should be made to avoid complications likely to endanger the flexibility of the pleura and of the pulmonary tissue. The most frequent and most dreaded complication in this respect is pleurisy. Pleuroscopy has disclosed that early and efficient freeing of adhesions is helpful in reducing dangerous pleurisies. Nevertheless, exudates are encountered almost constantly in the particular type of pneumothorax to which the author calls attention. He designates this type as "arched" pneumothorax. He has reference to the pneumothorax induced for apical lesions, usually for cavities. The detachment is easily accomplished except in the extreme apex which remains more or less adherent to the pleural dome and the mediastinal border. This adhesion, although limited, is particularly undesirable since it is here that the principal lesion is located. This type of pneumothorax is not effective in converting the sputum. The diseased tissue is imprisoned in a dead angle, and its liberation with the cautery is excluded by reason of the symphysial nature of the adhesion. To prevent this unfavorable condition the author recommends apical thoracoplasty, either alone or in combination with the existing pneumothorax. These interventions are not readily accepted by the patient and his family. The physician should have sufficient authority to convince them of the necessity of the intervention. The operation is not shocking, because a considerable pulmonary collapse is present. Resection of five or six ribs at one time represents nothing more than a plastic operation, a simple modification of the thoracic wall; the amount of visceral manipulation, which is the cause of shock in ordinary thoracoplasty, is nil or almost nil. In the 4 cases patients in which the author performed apical thoracoplasty for this particular indication the postoperative course was extraordinarily benign.

Arquivos Brasileiros de Oftalmologia, São Paulo

4:231-314 (Oct.) 1941. **Partial Index**

*Tumors of Optic Nerve. J. Pereira Gomes.—p. 231.

Tumors of Optic Nerve.—Pereira Gomes states that primary tumors of the optic nerve are rare. In the Brazilian literature, 13 cases have been reported. Primary intradural tumors of the optic nerve are benign, except for slight local malignity. The author reports that a patient operated on twenty-one years ago is in good health at present. Importance of the relationship of the tumors of the optic nerve and Recklinghausen's disease is stressed. Orbital intervention is of value in the treatment of many patients with glioma, but initial transfrontal craniotomy is inadvisable. The author prefers extirpation of the optic nerve for intradural tumors. Enucleation of the eyeball should be performed in exceptional cases when it becomes essential for the subsequent excision of the optic nerve. Golovine's technic of the opening of the capsule of the tumor for the removal of the growth is not advocated. Exenteration of the orbit should be performed in cases of extensive extradural tumors which fill the entire orbital cavity. In cases in which the tumor has already invaded the cranial cavity it is advisable to perform transfrontal craniotomy followed by orbital intervention. The performance of craniotomy should be reserved for the neurosurgeon.

Boletín de los Hospitales, Caracas, Venezuela

38:239-278 (April and May) 1939. **Partial Index**

*Local Sulfanilamide Therapy in Soft Chancroid. P. Guerra and A. Fuentes S.—p. 269.

Local Sulfanilamide in Soft Chancroid.—Guerra and Fuentes treated 25 patients with chancroid and phagedenic chancroid with sulfanilamide powder. The treatment consisted of washing the ulceration with warm water and covering it with fine sulfanilamide powder, obtained by pulverizing sulfanilamide tablets, and dressing it with plain gauze. The treatment was applied daily, and healing took place in four days to two weeks. The authors conclude that local application of sulfanilamide powder is the best treatment for simple and phagedenic chancroid, with or without suppuration. It is harmless, painless, nonallergenic and economical and brings about prompt results. The pain of chancroid is relieved in the first twenty-four hours of treatment.

Día Médico, Buenos Aires

13:1229-1256 (Nov. 24) 1941. **Partial Index**

New Treatment of Chronic and Acute Dacryocystitis. A. Sellarés and J. A. Mendía.—p. 1238.
*Importance and Benefits of Blood Transfusion. E. S. Sanmartino. —p. 1239.
*Vesical Paralysis of Central Origin: Testosterone Propionate Therapy. A. Casiello.—p. 1252.

Blood Transfusion.—Sanmartino advocates that interns be trained in blood transfusion and in the basic and technical details of the procedure. He further advocates the organization of well equipped centers for blood transfusion in all hospitals. These centers will function day and night with house physicians working in shifts. Training of interns to insure constant functioning of blood transfusion centers is of value in peace time as well as in war time.

Vesical Paralysis of Central Origin.—Casiello treated vesical paralysis of central origin with testosterone propionate. The treatment was effective in patients of either sex. Normal micturition took place after one or two injections. Three to four injections of 10 to 25 mg. each accomplished the results. Vesical paralysis was permanently controlled in 7 patients treated by the author.

Revista de Ortop. y. Traumatol., Buenos Aires

10:237-376 (Jan.) 1941. **Partial Index**

*Multiple Epiphysial Dystrophy: Clinical Study of Seven Cases. C. E. Ottolenghi and D. Muscolo.—p. 267.

Multiple Epiphysial Dystrophy.—Ottolenghi and Muscolo report 7 cases of multiple epiphysial dystrophy. There were two sets of brothers in the group. The disease is a clinical entity with clinical and roentgenologic characteristics which differentiate it from achondroplasia and other types of bone dystrophy. Heredity and familial factors are not indispensable for the development of the disease, which, as a rule, appears in children between the ages of 2 and 10 years and, in rare cases, in early youth. Symptoms consist of pain and rigidity of joints, progressive, slow, flexure of the hip joints and the knees, kyphosis and progressive deformation of the legs, sternum and thorax. Flatfoot, talipes valgus and permanent luxation of the patella are frequent. Roentgenograms reveal that the disease is bilateral and of multiple localization. The epiphyses are predominantly involved. The metaphyses and diaphyses are involved only in cases of grave epiphysial dystrophy in which all the joints are involved. In such cases the diaphyses may be decalcified and the metaphyses flattened. The most acute lesions are those of the spine, hip joints and knees. The cranial bones, as a rule, are normal. The roentgenograms of patients in familial cases are similar. After adolescence the osteoarticular lesions no longer progress, but the deformities remain permanent. The deformity of the legs may interfere with locomotion, the articular changes may develop into arthritis deformans and the vertebral deformity may compress certain internal organs. Intelligence is greatly diminished, and some of the patients approach the status of idiocy. Endocrine disorders, especially those of the hypophysis, appear to be the cause of the disease. However, up to now opotherapy has not been effective. The treatment is orthopedic. It consists of continued extension, tenotomy, osteotomy and arthroplasty. The authors obtained satisfactory functional results from multiple orthopedic procedures.

Deutsche Zeitschrift für Chirurgie, Berlin

254:555-650 (June 6) 1941

Inflammatory Diseases of Meninges of Spinal Cord with Particular Consideration of Space Limiting Adhesion. Rosemarie Feiler.—p. 555.
Clinical Aspects of Cystic Kidney. G. Rintelen and G. U. Tilk.—p. 588.
Periarthritis Humeroscapularis. M. Saegesser.—p. 616.
Testes and Spermatic Ducts After Vasectomy. F. Roulet and F. Andina.—p. 620.
*New Idea in Plastic Repair of Head of Tibia. H. Kast.—p. 628.
Yellow and Brown Discoloration of Intervertebral Disk. E. Güntz.—p. 633.

Plastic Repair of Head of Tibia.—Kast of Zurich effects plastic repair of the head of the tibia by a pedicled transplant from the anterior, distal part of the shaft of the femur. He inserts the head of the fibula through a slit into the head plate in order to avoid the lateral slipping off of the femoral condyles and at the same time provide support for the femur between the condyles.

Deutsches Archiv für klinische Medizin, Berlin

187:465-608 (July) 1941. **Partial Index**

*Hepatorenal Syndrome in Patients with Congested Liver and Heart Disease: Its Modification by Salyrgan. W. Nonnenbruch.—p. 465.
Clinical Aspects of Carcinoma of Tail of Pancreas. A. Gebauer and W. Brosig.—p. 478.
*"Laster's Disease" (Spasms in Finger Capillaries in Workers on Lasting Machines). A. Schrank.—p. 491.
Ambard's Formula and Urea Purification Value in Self Experiment with Changing Tolerance. K.-F. Schmidt.—p. 519.
*Night Blindness as Symptom of Internal Disease, Particularly of Hepatic Disorders. R. Hasche-Klünder.—p. 524.
Amyloid Nephrosis, Amyloid Contracted Kidney and Blood Pressure. H. Willer.—p. 539.
Significance of Reticulum for Normal and Pathologic Erythropoiesis. W. Tischendorf.—p. 556.

Hepatorenal Syndrome and Salyrgan.—Nonnenbruch points out that in patients with heart disease and passive congestion of the liver the renal function frequently shows impairment which constitutes the hepatorenal syndrome. The term is applied to various changes in the renal activity which develop without anatomic changes in the kidney but which are dependent on hepatic disease and which subside with its disappearance. Patients with passive congestion of the liver showed oliguria with hyposthenuria but without renal insufficiency ("hyposthenuria-N), as well as oliguria with hyposthenuria and with renal insufficiency. In some cases complete anuria developed without essential anatomic changes in the kidneys. The hepatorenal syndrome with or without anuria developed in several patients immediately after the administration of salyrgan. This was not only true of patients with a congested liver but of a patient with hepatic cirrhosis, in whom fatal anuria followed the administration of salyrgan. This represents a hitherto unrecognized salyrgan impairment which probably has no connection with mercury and causes no anatomic changes in the kidney. Its mechanism is as obscure as is the hepatorenal syndrome itself. These observations of harmful effects of salyrgan should not lead to unjustified concern about this best of all diuretics. The physician must be on the lookout for the hepatorenal syndrome in every case of hepatic disease, particularly in the presence of passive congestion of the liver, and should know that it can be caused by salyrgan and related substances.

Laster's Disease.—According to Schrank, laster's disease is an occupational disorder which develops in workers on lasting machines. It is characterized by spasms in the capillaries of the fingers and develops in constitutionally predisposed workers as the result of irritation by vibration and cold. Capillaroscopy discloses severe spasms of the capillaries. The reaction is local and not of a central nervous nature, although the entire nervous system may become irritated if it persists for a long time. Therapy is ineffective as long as the man continues to work on the machine. Improvement results, if he changes his work, but symptoms may persist for some time. Treatment with diathermy and with alternating baths offers good results in cases of severe disease in which muscular and articular apparatuses are involved. Since alcohol and nicotine are vascular poisons, patients with laster's disease must abstain from them. Young workers are more predisposed to laster's disease than older workers. The author advises that men working on lasting machines be relieved after short periods and they should not work on these machines all the time. Compensatory gymnastics are advisable. Inquiries to shoe factories disclosed that the frequency of laster's disease had decreased from 50 per cent in 1931 to 11 per cent. In factories with modern, nonvibrating lasting machines and automatic holding devices laster's disease has completely disappeared.

Night Blindness as Symptom of Hepatic Disorders.—Hasche-Klünder directs attention to the fact that night blindness develops not only as the result of insufficient vitamin A consumption but in disorders in which the vitamin requirements are increased or in the presence of deficient absorption or of defective vitamin transformation. According to Zaffke and many other investigators dark adaptation is impaired in many internal diseases, particularly in hepatic disorders. At the author's hospital dark adaptation was tested in 20 patients with hepatic cirrhosis. Defects, some severe, were detected in 19. Of 9 patients with catarrhal icterus 5 had impaired dark adaptation. The author suggests that in patients with icterus the appearance of night blindness and its severity might permit prognostic conclusions with regard to morphologic changes in the liver. Disturbances of dark adaptation were observed in cases of severe cholecystitis, cholelithiasis and cholangitis associated with jaundice. The author suggests that the dark adaptation test may be utilized as a functional test of the liver. Night blindness is demonstrable also in all secondary avitaminoses resulting from sprue, carcinoma, achylia and the like.

Zentralblatt für Gynäkologie, Leipzig

65:1405-1436 (Aug. 2) 1941. **Partial Index**

*Rapid Determination of Vitamin C with Rotter's Intradermal Test. W. Dollé.—p. 1414.
Rare Case of Complicated Perforation of the Uterus and Its Cure. H. Husslein.—p. 1423.
Interesting Birth of Uniovular Twins. W. Lang.—p. 1427.

Rapid Determination of Vitamin C.—Dollé used the intradermal test of Rotter for the determination of vitamin C in 82 patients. The test is based on the fact that the injection of a small quantity of dichlorphenolindophenol is followed by

decoloration much more rapidly if the vitamin C supply is normal than if scurvy is present. Rotter concluded that the decoloration time indicates the vitamin C saturation of the tissues. He observed that in persons saturated with vitamin C the dye disappears from the skin in less than five minutes, in persons who receive a normal diet in five to ten minutes and in persons with an inadequate supply after more than ten minutes. Of the 82 patients tested by Dollé 55 had a prolonged decoloration time, suggesting vitamin C deficiency. Dollé concludes that Rotter's intradermal test is adequate for a rough quantitative estimation of fluctuations in the vitamin C content. The test is simple and requires little time. Results obtained in the 82 cases indicated that a C hypovitaminosis may exist even in the absence of signs.

Folia Pharmacologica Japonica, Kyoto

33:1-110 (Sept.) 1941. **Partial Index**

*Test Method for Digitalis with French Mice (Mus Musculus Var. Alba). E. Yamasaki.—p. 75.

Digitalis Test Method with French Mice.—Yamasaki used French mice (Mus musculus var. alba-Bechstein) as test animals in determining the potency of digitalis and strophanthin preparations. The sensitivity of these animals to g-strophanthin appears to be identical irrespective of sex, pregnancy or season; but definite differences are noticeable as to age (body weight) and diet. The standardized test condition should include a standardized diet and the minimum body weight of 20 Gm. In such animals the minimal lethal dose of g-strophanthin by subcutaneous injection should be 0.008 to 0.009 mg. per gram of body weight. Sensitivity to digitalis in standardized mice approximates that of rabbits, is lower than that of dogs, cats, guinea pigs and Chinese mice but is higher than that of white rats. As tested in French mice, the digitalis leaves are more potent than the injectable digitalis preparations; digitoxin is more effective than g-strophanthin, all in agreement with the common clinical experience. There is a significant variation in the minimal lethal dose of four varieties of digitalis preparations when tested by the intravenous, the intraperitoneal or the subcutaneous route. This is explained by the fact that in subcutaneous or intraperitoneal administration the effect is due to the slow-acting digitoxin component, whereas in intravenous injection the quickly acting gitalin, gitoxin and genine are chiefly responsible for the digitalis action. By a combination method, in which all these routes of administration are employed, the potency of the preparation as a whole can be tested and the comparative effects of all ingredients can be determined. The strength of the digitalis preparations to be employed in the test method with French mice should be a 10 per cent infusion of the leaves, 0.02 per cent of digitoxin and 0.02 per cent of g-strophanthin, while for injections the entire contents of ampules are used.

Kitasato Archives of Experimental Medicine, Tokyo

18:97-170 (Aug.) 1941

Studies Concerning Japanese Epidemic Encephalitis Virus in Eye. R. Arizawa.—p. 97.

*Serologic and Bacteriologic Observations in Paratyphoid B Cases: (I) Analytic Widal Reaction of Patients' Serums. H. Anzai.—p. 114.

*Id.: (II) Complement Fixation Test, Serum Protection Test and Observations on Strains of Paratyphosus B Isolated from Patients' Blood or Feces. H. Anzai.—p. 124.

Action of Sulfamethylthiazole (Toriseptin M) in Mice Infected with Pneumococcus. F. Ozeki.—p. 135.

Intoxication by Manganese in Well Water. R. Kawamura, H. Ikuta, S. Fukuzumi, R. Yamada, S. Tsubaki, T. Kodama and S. Kurata.—p. 145.

Paratyphoid B.—Anzai points out that since the observation of "specific phase and nonspecific phase variation" of Bacillus paratyphosus B and other Salmonella types it has been believed that the flagellar variation of a bacillus had no connection with its virulence or pathogenicity. Investigations on "Vi antigen" of Bacillus typhosus clarified the relationship between the antigenic structure of B. typhosus and its virulence: the V form of this organism, which possesses Vi antigen, has a stronger virulence for mice as well as pathogenicity for human beings than the W form bacillus without Vi antigen, and almost all bacilli isolated from blood of patients with typhoid belong to V or VW form. The author attempts to clarify which phase (specific or nonspecific) bacillus may be isolated from blood or feces and which phase H agglutinin may be found in the serum of patients with paratyphoid B. He tried the analytic Widal reaction with 85 specimens of serum collected from 42 patients with B. paratyphoid B infection and in the serums of 60 (71 per cent) the specific H agglutinin for B. paratyphosus B was detected; in the serum of 46 (54 per cent) the specific H agglutinin only was demonstrable; in the serum of 14 (17 per cent) both specific and nonspecific H agglutinins were demonstrable; 25 specimens (29 per cent) of serum showed the nonspecific H agglutinin only. The H agglutinin (specific or nonspecific) for B. paratyphosus B was elaborated to the maximum titer within the second or third ten days from the onset of disease. The O agglutinin was produced somewhat more slowly than the H agglutinin. A rise of the agglutinin titer for B. typhosus and B. paratyphosus A was demonstrated in the case of B. paratyphosus B. The production of such heterophilic agglutinins goes parallel with that of the causative organism. The author found in absorption tests that the agglutinins for B. paratyphosus B and B. typhosus existed in the serum of patients as well as in normal serum. Agglutinins for Y 27 strain (agglutinated specifically in the presence of Vi antibody) and B. paratyphosus C showed almost all the same titer in the whole course of illness. Family infection is not always caused by the same phase bacillus.

Paratyphoid B Cases: Complement Fixation and Other Tests.—Anzai describes results of the complement fixation test and of the serum protection test with the serum of patients with paratyphoid B. The specimens were the same ones used in the aforementioned experiments, and the antigens used were prepared with the autogenous bacilli which had been isolated from blood or feces. The author found that bacilli isolated from blood or bile in cases of paratyphoid B fever show greater phase stability than those from feces when subcultured on plain agar or endoagar or in normal broth or Kauffmann's tetrathionate broth medium. Freshly isolated organisms showed remarkable decrease in their virulence during the preservation for half a year by being subcultivated monthly on plain agar. Flagellar antigens are not concerned with the virulence of a bacillus. It may be inferred that H antigens take part in complement fixation activity. Serum protection tests were conducted with patients' serum, and it was demonstrated that both specific and nonspecific flagellar antibodies have no relation to the protecting activity.

Okayama-Igakkai-Zasshi, Okayama

53:1527-1762 (Aug.) 1941. **Partial Index**

*Remote Postoperative Results in 33 Cases of Splenectomy. S. Wada.—p. 1711.

Remote Postoperative Results of Splenectomy.—Wada made a statistical study of 33 patients with a variety of diseases, on all of whom splenectomy was performed. Eight (24.2 per cent) died soon after the operation. Of 17 cases of Banti's disease in which the spleen was removed during the first stage of the disease death did not occur in any immediately after the operation. Splenectomy performed during the second stage of Banti's disease resulted in a mortality of 16.6 per cent, while cases in which treatment had been delayed (third stage) were attended by a high mortality rate (40 per cent). Although fatal termination was unavoidable, splenectomy appeared at least to bring about temporary comfort to the patients and to prolong the survival period, even when performed at late stages of the disease. In one instance of syphilitic splenomegaly surgical removal of the organ was followed by a period of thirteen years and eight months in which the patient remained in relatively good health. In some of the cases of Banti's disease in which splenectomy was performed during the third stage the survival period was prolonged to more than three years after the operation.

Taiwan Igakkai Zassi, Taihoku, Formosa

40:1349-1556 (Aug.) 1941. **Partial Index**

*Bronchial Asthma with Bronchomycosis Aspergillina: Case. G. Yogo.—p. 1540.

Bronchial Asthma with Bronchomycosis Aspergillina.—Yogo reports a case of bronchial asthma with bronchomycosis aspergillina in a female patient aged 43 who presented a typical clinical picture of allergic bronchitis with secondary anemia and leukocytosis with a shift to the left, but without eosinophilia,

together with an increased sedimentation rate and the expectoration of greenish yellow sputum. The mycelial forms were obtained first from the sputum, and on one occasion a few leukocytes were seen with phagocytosed spores of the fungus on Gram stained smears. When the patient was skin tested with extracts of aspergillus and of alternaria in Coca-Milford's fluid, the former gave a positive reaction, while the reaction to the latter was entirely negative. The clinical manifestations of the disease showed definite improvement after ten days of intensive treatment with 1 Gm. each of potassium iodide and potassium bromide by mouth.

Geneeskundig Tijdschr. v. Nederl.-Indië, Batavia

81:2177-2232 (Oct. 14) 1941

Places Where Infected Anopheles Maculatus Was Found During an Epidemic of Malaria in East Java. W. G. Venhuis.—p. 2178.
Pronounced Frontal Inclination of Sinus Transversus and Consideration of Position of Mastoid Portion of Sinus Transversus in Indonesian Patients Undergoing Operation. Moewardi.—p. 2189.
Syphilis in the Third District of Island of Curaçao, Netherland West Indies. H. Spitzer.—p. 2199.
Meningocele. R. Hendarmin.—p. 2206.
Sulfapyridine in Treatment of Meningococcic Meningitis: Case. L. van der Molen.—p. 2208.
*Another Case of Thrombopenic Purpura Caused by Quinine. W. J. Bais.—p. 2213.

Thrombopenic Purpura Caused by Quinine.—Bais points out that purpura caused by quinine, while rare, is likely to be encountered in the Netherland Indies because of the extensive use of quinine medication. He describes a case of quinine purpura observed by him, this being the third case of this type recently reported. Recognition of such cases is made difficult by the fact that malaria itself may cause capillary toxicosis. He suggests that synthetic drugs be employed whenever hemorrhages occur in the course of treatment of malaria.

81:2233-2280 (Oct. 21) 1941

Hyperchromic Pregnancy Anemia. P. J. Zuidema.—p. 2234.
*Paroxysmal Paralysis (Familial, Periodic Paralysis): Case. P. J. van der Schaar.—p. 2241.
*Combat of Hookworm in Simpson Bay (St. Martin) in Netherland West Indies. H. Spitzer.—p. 2255.
Gluteal Erythema (Jacquet). D. P. R. Keizer.—p. 2259.
New Method of Roentgenographic Projection of Zygomatic Arch. G. J. Staverman.—p. 2264.
Dermoid Cyst in Mediastinum. D. Brouwer.—p. 2267.
Case of Sarcoma Probably Originating in Liver: Formation of Metastases. W. G. F. Buning and J. R. von Ronnen.—p. 2269.

Paroxysmal Paralysis (Familial, Periodic Paralysis).—A soldier aged 34, of the emotional type, showed, after a day of exhausting field maneuvers, paralysis of all four extremities and to a considerable extent of the respiratory muscles. The paralysis persisted for several hours and then regressed, so that after twenty-four hours the man had regained the full use of his extremities. The tendon reflexes were abolished at the height of the paralysis. The disorder was diagnosed as paroxysmal paralysis. In the literature the disorder has been designated as familial periodic or paroxysmal paralysis. In Europe the familial and hereditary form seems to predominate, but in Japan hereditary and familial factors seem to be of minor importance. The attack usually begins at night; in the reported case the paralysis began during the midday rest. Prodromal symptoms may exist and can be traced to disturbances in the sympathetic nervous system: there may be weakness, headache, nausea, dryness of the mouth, thirst, morbid hunger and the feeling that the intestine does not function properly. Some authors think that intestinal disturbance in the form of autointoxication is the cause of the paralysis. The disorder is more frequent in males than in females (4:1, according to Straus). The attacks often begin with puberty and subside after the thirty-fifth year. The first attack may occur during the presenium. The interval between the paroxysms may be weeks, months or even years. Many symptoms point to the central vegetative centers, and the hypothalamus has been regarded as important. Potassium compounds have been used effectively in the treatment of the attacks. Van der Schaar cites reports on the hereditary transmission of paroxysmal paralysis and on the concurrence of paroxysmal paralysis and progressive muscular dystrophy.

Hookworm in Netherland West Indies.—Spitzer relates the story of hookworm infection, brought in 1890 to Simpson Bay, a settlement of white fishermen on St. Martin in the Netherland West Indies. The disease gradually spread, and some children died of it. The food shortage during the years from 1914 to 1918 greatly intensified the infection. The people did not know the cause of the disease. Physicians of the health service discovered hookworm infection in 1917 and began treatment with oil of chenopodium. In 1930 it was found that the majority of the inhabitants of Simpson Bay were again infected with hookworm. Chenopodium treatment was resumed, and regulations were passed regarding disposal of excreta, wearing of shoes and submission to examination and, if necessary, to treatment. Control examinations in recent years disclosed that the hookworm had been eradicated. The author concludes that (1) in the crusade against hookworm, individual therapy, where possible, is preferable to general treatment; (2) in areas where hookworm infection is endemic definite results cannot be obtained without hygienic measures; (3) none of the known medicaments alone are entirely satisfactory, and (4) various medicines should be considered, especially chenopodium oil and tetrachlorethylene.

Acta Obst. et Gynec. Scandinavica, Stockholm

21:199-314 (No. 3) 1941. **Partial Index**

*Hypoprothrombinemia Neonatorum and Its Relations to Vitamin K. M. Rouhunkoski and N. Saksela.—p. 203.
*Perineal Endometriosis After Prolapse Operation. A. Jessing.—p. 223.

Hypoprothrombinemia Neonatorum and Its Relations to Vitamin K.—Rouhunkoski and Saksela report the results of examination of the prothrombin content of the blood of newly born infants with the micromethod of Plum and Dam. The authors made their studies on 74 full term infants of normal mothers, on 15 premature infants of normal mothers, and on 14 infants whose mothers had a nephrogestosis. They compared also the prothrombin time of the blood in the mother, the child and the umbilical cord. During the first hours after delivery infants born at term had an average prothrombin time of fifty seconds (normal time twenty-five to thirty-five seconds), but after that it increased decidedly, reaching ninety-five and eight-tenths seconds on the second day. The prothrombin time was still long on the third and fourth days and then gradually diminished. On the ninth day it was near the normal level. In the prematurely born the mean prothrombin period was somewhat shorter than in full term infants. The prothrombin period of the infants born to mothers with nephrogestosis generally was longer than was that of the infants of healthy mothers. It is assumed that variations in the permeability of the placenta to prothrombin and possibly to vitamin K play a part in the differences in prothrombin time. Comparison of the prothrombin time of the blood in mothers, infants and umbilical cords disclosed that it averaged twenty-four and three-tenths seconds in the mothers, forty-four seconds in the umbilical cord and forty-nine and one-tenth seconds in the infants. The greater the difference between the prothrombin time of the maternal and the umbilical cord blood, the greater was the maximum prothrombin period in the newborn infant. The physiologic decrease in the prothrombin time of the newborn could be almost completely prevented by the injection of vitamin K into the mothers from fifty hours to one hour before birth or into the infants immediately after birth.

Perineal Endometriosis After Prolapse Operation.—Jessing reports the case of a woman aged 39 with symptoms of prolapse and irregular menstruation. The operative intervention consisted of curettage and anterior colporrhaphy and colpoperineoplasty. Three months after operation ventrosuspension of the uterus was performed. About six months after the colporrhaphy she began to suffer from "boils" in the perineum during each menstruation. A few days before the onset of the menses there would appear a small, tender nodule that increased in size during menstruation, perforated and discharged blood and mucus. It disappeared with the cessation of the menses. The nodule increased in size from that of a pigeon's egg to that of an orange. The microscopic examination of the tumor when it was removed established the diagnosis of endometriosis. The endometriosis apparently developed as the result of implantation in the course of the operation.

Book Notices

The Blood Bank and the Technique and Therapeutics of Transfusions. By Robert A. Kilduffe, A.B., A.M., M.D., Director, Laboratories, Atlantic City Hospital, Atlantic City, N. J., and Michael DeBakey, B.S., M.D., M.S., Assistant Professor of Surgery, School of Medicine, Tulane University of Louisiana, New Orleans. Cloth. Price, $7.50. Pp. 558, with 215 illustrations. St. Louis: C. V. Mosby Company, 1942.

Few books may be considered more timely than this volume, as the problems relating to blood banks and transfusions are increasing in importance and in detail. The sixteen chapters represent a sincere attempt to present the necessary information with a minimum of wasted words. Following an interesting and well illustrated chapter on the history of the development of blood transfusion there appear adequate discussions on the rationale, indications and contraindications, the military aspects of transfusion, special types of transfusion, technic of blood typing and compatibility tests, anomalous blood typing reactions (their nature, causes and detection and methods for their elimination), the "universal donor" and the "universal recipient," blood bank, the changes which occur in stored blood, the biochemical changes in stored blood, the operation of a blood bank, plasma transfusion, the preparation and preservation of concentrated and dried plasma, methods and technic of transfusion and complications of blood transfusion. There are several commendable features to this book in addition to the logical arrangement of the descriptions and the comparative simplicity of the authors' terminology; these include an adequate index, profuse and meticulous illustrations and complete lists of references. As an example of the latter, the chapter on rationale, indications and contraindications contains over nine hundred references, and the chapter on complications of blood transfusion lists almost six hundred references.

A Textbook on the Nursing and Diseases of Sick Children for Nurses. By Various Authors. Edited by Alan Moncrieff, M.D., F.R.C.P., Physician to the Children's Department, Middlesex Hospital, London. Third edition. Cloth. Price, 21s. Pp. 639, with 142 illustrations. London: H. K. Lewis & Co., Ltd., 1941.

This edition is completely revised and slightly longer than the first and second editions. A new chapter on children in the tropics and a new section in the appendix on physical therapy have been added. Not only has the text of the other chapters undergone extensive revision but the number of illustrations has been increased and many are changed from those used in former editions. The text maintains its well organized but informal style and is rich in factual data necessary for pediatric nursing in the hospital or the home. Instructions are concise and explicit, and the material is particularly adapted for sound nursing education. Few pediatric textbooks for nurses devote as much space to desirable orthopedic information as this edition. The chapters on infant feeding and disorders of nutrition would not be considered adequate for instruction of nurses in this country and is not in keeping with the quality of the other chapters in the book. In general, this textbook can be well recommended for hospital libraries and as a reference book for nurses to supplement standard works on pediatric nursing now in common use.

Objective and Experimental Psychiatry. By D. Ewen Cameron, M.D., Professor of Neurology and Psychiatry, Albany Medical College, Albany. Second edition. Cloth. Price, $3.75. Pp. 390. New York: Macmillan Company, 1941.

The present volume is a second edition of a monograph which has an unusual aspect. Its contents differ from the psychiatry presented in textbooks which is of a descriptive and clinical nature in that it attempts to bring together research material from allied fields rather than conventional hospital and clinical psychiatry. The studies made by the psychologist in evaluating the use of intelligence testing, particularly those phases having to do with psychopathology, studies made by nutritionists, endocrinologists and others in the psychosomatic field, and the research carried on by many individuals in several spheres of scientific endeavor having to do with the electrical aspects of mental function and the use of electrical tests with relation to psychology are also emphasized. The present edition is far superior to the original edition, which was rather sketchy and lacked the emphasis on citations with the fulness which the present volume contains. The material on psychosomatic medicine, endocrine aspects of psychiatry and electrical phenomena which could not be emphasized to the same extent in the original edition, which came out about five years ago, all find a place in the present volume. It is an excellent contribution to the psychiatric field and is a service rendering supplement to conventional psychiatry. It opens vistas which have been revealed to the hospital and clinical psychiatrist previously only in glimpses.

Diseases of the Nervous System Described for Practitioners and Students. By F. M. R. Walshe, O.B.E., M.D., D.Sc., Physician in charge of the Neurological Department, University College Hospital, London. Second edition. Cloth. Price, $4.50. Pp. 325, with 32 illustrations. Baltimore: William Wood & Company, 1941.

The first edition of this abbreviated textbook of neurology was reviewed in THE JOURNAL on June 21, 1941, page 2823. The question raised at that time as to its usefulness has been amply answered in the affirmative by the demand which has made necessary a second edition within a year's time. The book has been extensively revised, and several excellent illustrations have been added. The most extensive revision is of the section on intracranial tumor, which has been materially improved; yet it is difficult to understand the author's attitude of extreme pessimism regarding intracranial gliomas, which is not in keeping with American experience. Can this possibly be due to lack of diagnostic acumen or lack of interest, or maybe to contact with incompetent neurosurgeons? The statement "All gliomas ultimately prove fatal" simply is not true when interested clinicians and able surgeons are in charge. Certainly the picture presented by these tumors as a group is a distressing one, and physicians have passed beyond the stage at which blinding themselves and others to this fact is excusable, but the opposite attitude is equally reprehensible. The series of cases of astrocytoma of the cerebellum in which as high as 90 per cent of the patients have been completely relieved of all symptoms of their tumors for so many years that at least some of them can be regarded as "cured" and the cases of less common cerebral tumors in which similar results have been obtained by removal of an isolated nodule within a cyst or amputation of a frontal or an occipital lobe containing all of the tumor are not to be ignored. Furthermore, the author gives no indication that for many of the slowly growing gliomas appropriate operation will provide material relief from symptoms and several years of happy, useful life.

The section on the sensory system has been considerably enlarged and improved, as has the section on meningococcic meningitis. An elementary section on tissue reactions of the nervous system has been added.

Many of the errors pointed out in the previous review have been corrected; many persist. The statement that visual impulses from the retina to the area striata of the calcarine cortex pass through the pulvinar persists. There is no evidence that the pars intermedia and the pars posterior of the hypophysis are closely associated physiologically. It is interesting that the author would ascribe to the combined action of the secretion of the pars posterior and "certain nuclei in the walls of the third ventricle" such questionable functions as the stimulation of smooth muscle and the regulation of blood pressure and of sugar metabolism and ignore the one established function—the control of water metabolism. Although vasovagal syncope is discussed, no mention of hyperirritability of the carotid sinus or of spontaneous hypoglycemic attacks is found. In the discussion on multiple sclerosis, one is amazed to find the statement that the lesions do not destroy the axis cylinders. Although this is often true of early or mild lesions, it is not true of many of them. In the discussion of the disturbances produced by a cervical rib there is but fleeting mention of the scalenus anticus syndrome and no reference to the valuable procedure of section of the scalenus anticus muscle in both conditions. It is impossible to imagine how a neurologist of the author's experience could say that syringomyelia is almost invariably painless. The statements that trigeminal neuralgia rarely makes its appearance before the age of 50 and that the pain never first appears in the first division are not in accord with the facts.

The discussion of the treatment of epilepsy, on pages 109 to 113, will be worth more than the cost of the book to all physicians who will follow its excellent suggestions. They may,

however, find the injection of 3 grains (0.2 Gm.) of soluble phenobarbital more than a little inadequate in controlling status epilepticus.

The book remains a disappointingly elementary presentation of an interesting subject by an experienced and able author. One hopes that when the author is freed from his military responsibilities he may undertake a more adequate treatment of the subject.

Alergia nasal: Coriza o rinitis espasmódica: Sintomatología, diagnóstico, reacciones alérgicas concomitantes, tratamiento. Anafilaxia y alergia: Conceptos modernos. Por el Dr. Emilio E. Bacigaluppi. Tesis de doctorado. Universidad nacional de Buenos Aires, Facultad de ciencias médicas, Escuela de medicina. N.º 5291. Paper. Pp. 226, with illustrations. Buenos Aires: La Semana Médica, Imp. de E. Spinelli, 1940.

The work begins with an introduction, or prologue, which deals with the history of anaphylaxis and leads up to the first chapter. In this the author takes up the definition of anaphylaxis and allergy and discusses at length the difference between the two. Here, as in the rest of the work, he quotes freely from American and European authors. The whole work is more or less a compendium of present day knowledge. The work as a thesis reveals a great deal of painstaking effort in reviewing the literature on the subject, beginning with the observations of Magendie in 1839 and following it up to the present day. The only original work done by the author is contained in the 450 case histories at the end of the book. Here he confirms points already proved by others. Although the work does not make any claim to originality, it is nevertheless filled with valuable information. It will be helpful to any one desiring a fundamental knowledge of allergy, particularly in reference to the upper respiratory tract. It is written in concise, clear style and makes rather interesting reading. The chapter on treatment is complete. Therapeutic measures outlined are all accepted methods and of proved value.

Principles and Practice of Orthodigita. By Harry A. Budin, M.Cp., Head of the Department of Orthodigita, The First Institute of Podiatry, Long Island University, New York. Edited by Herman Scheimberg, M.Cp. Cloth. Price, $4. Pp. 263, with 144 illustrations. New York: Strathmore Press, 1941.

Before the review can be understood the word "orthodigita" must be defined. Orthodigita is a branch of podiatry practice concerned with the prevention, amelioration and correction by nonsurgical means of toe deformities and malalinements, as well as the resultant lesions and other painful effects. One of the objectives of orthodigital treatment is alleviation of pain incidental to deformity (corns, calluses or inflamed bursae) as well as that concurrent with traumatic arthritis, hallux rigidus, Morton's toe, or improper functioning of the toes of the fore foot. Practice is based on the principle that joint contractures can in most cases be stretched sufficiently to allow a toe to resume its normal alinement. This involves the employment of tractive forces. For the past ten years the author has been actively engaged in developing appliances and technics for the correction of toe deformities by nonsurgical means. Several of the appliances appear to be effective. However, "before and after" illustrations would aid in determining the value of apparatus or procedure.

Low Back and Sciatic Pain Caused by Intervertebral Disc Herniation: Anatomic and Clinical Investigations. By Sten Friberg. Translated from the Swedish by Catherine Djurklou. Acta chirurgica Scandinavica. Vol. LXXXV, Supplementum 64. Paper. Pp. 114, with 21 illustrations. Stockholm: P. A. Norstedt & Söner, 1941.

This small book can be recommended as among the best of all the contributions to this comparatively new and therefore controversial subject. The author has presented the clinical as well as the anatomic aspects of the subject. He had extensive material and clinical resources. His colleagues and collaborators were among the best that Scandinavia has to offer. Among his fellow workers were Waldenstrom, Backman, Sjowall, Knutsson, Izikowitz and Carstam. The author's conception of the contributions by the American authors is truly remarkable. The translation from the Swedish is excellent.

Friberg states that the term sciatica was originated by Cotugno in 1764, exactly one hundred years before Lasègue described the sign known by the latter's name—sometimes called the Goldthwait sign. He points out that Cotugno stated that, despite the fact that sciatica is regarded as a neuralgia, the pain never affects the whole nerve; that is, it never involves both the tibial and the peroneal branches but only the latter. He states that the first intervertebral disk herniation to be described clinically is the one described by Kocher in 1896.

Friberg discusses the relationship between the lumbar nerve roots of the spine as well as experimental investigations on lumbar disk herniation. He believes that during life it must be assumed that the nucleus is degenerated before it ruptures, unless the intervertebral disk has been submitted to unusual violence. Extremely strong pressure, sufficient to enter the bony substance, he believes is a prerequisite to protrusion of the annulus fibrosus. If the whole or a part of the nucleus pulposus is loosened, the detached portion alone protrudes. In his description of observations made before and after the operation, he makes the direct statement that the intervertebral disk in the intervertebral space exposed by operation was on the whole unchanged. That is, the space was not narrowed despite the fact that operation had revealed perforation of the annulus fibrosus through to the nucleus pulposus and that large portions of the latter had been removed. Not all disk prolapses produce symptoms of sciatica, nor are all sciatic troubles due to herniations. Herniations up to 8 by 8 by 8 mm. may lie lateral to the dura and nerve root without a demonstrable filling defect in the myelogram. The author describes his own method of removing iodized oil from the spinal canal without operation. He illustrates his low adjustable cradle frame on which the patient lies during the operation.

A Primer on the Prevention of Deformity in Childhood. By Richard Beverly Raney, B.A., M.D., Associate in Orthopaedic Surgery, Duke University School of Medicine, Durham, N. C. In collaboration with Alfred Rives Shands Jr., B.A., M.D., Medical Director, Alfred I. Du Pont Institute of the Nemours Foundation, Wilmington, Del. Cloth. Price, $1. Pp. 188, with 88 illustrations by Jack Wilson. Elyria, Ohio: National Society for Crippled Children, Inc., 1941.

The reader of this review is cautioned to understand at the outset the types of persons for whom the book was written: general practitioners, public health nurses, physical therapists and welfare workers. The author directs his book toward the person who first comes in contact with those children whose illness may produce residual deformity. The author discusses the common diseases of childhood which may cause deformities and then discusses deformities of the upper extremity, lower extremity, neck, back and chest. He believes deformity can be prevented in either of two ways—first by forestalling the causal effects or by preventing the tissue changes which these disorders tend to produce. A glossary of routine orthopedic terms is added. The observance of simple preventive measures will often forestall serious deformities, while neglect of these measures, through ignorance or other causes, will not only allow the deformities to develop but may allow them to become so advanced that their subsequent correction becomes impossible. It is therefore important that those who first see the affected children should possess a knowledge of preventive treatment.

Alergia polínica. Por el Dr. José A. Bozzola. Tesis de doctorado en medicina. Universidad nacional de Buenos Aires, Facultad de ciencias médicas. Acta No. 5363. Paper. Pp. 235, with illustrations. Buenos Aires, 1940.

The book is divided into four parts. The first part is mainly devoted to the definition of terms and a discussion of the difference of opinions among authors. He suggests the term alergia polinica (pollen allergy) as best suited to describe the clinical manifestations produced by the inhalation of pollens. The remainder of this chapter is devoted to the history of pollinosis. The second part is devoted entirely to botany. This is a complete discussion and description of pollen grains and the mechanism of pollination. This chapter describes what he terms the allergenic flora of the Argentine, and this could be considered the most useful part of the book. It would certainly be of great interest to any one desiring a knowledge of the pollens predominating there. The third and fourth parts of the book represent a good compilation of the present state of knowledge concerning allergy. It undoubtedly will be of great assistance in the study of allergy in the Spanish speaking countries, where there is a lack of literature published in that language. The bibliography is extensive and complete. The last part of the book is given over to a series of case histories. The index is of assistance.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

CARCINOMA OF THE PROSTATE

To the Editor:—**Will you please give me information about prostatectomy, particularly when it is performed for a malignant neoplasm? What about acid phosphatase, stilbestrol and castration? Can you give any other item of interest?** **M.D., California.**

ANSWER.—It is the opinion among urologists that once the clinical diagnosis of carcinoma of the prostate has been made it is technically impossible to do any sort of surgical procedure that would effect a cure. Once the diagnosis of carcinoma of the prostate has been definitely made, the condition is no longer surgical. Obstructions resulting from the lesion can be removed by transurethral resection, and attempts may be made to control the progress of the disease by roentgen or radium therapy but there is no case in which either one has been proved to cure a patient. These measures are instituted only for the purpose of some control of the progress, as well as for the control of associated local pain.

The question about acid phosphatase carries no particular meaning, as this substance is not used in any way for treatment. Acid phosphatase is found in fairly high concentration in the normal prostate and is recognized as a product of adult prostatic epithelium. Recent investigation has revealed that malignant hyperplasia of this epithelium increases the acid phosphatase content to such an extent that its increase becomes appreciable in the blood stream; hence active carcinoma of the prostate, especially when associated with metastases, will usually produce an increase in the acid phosphatase content of the blood serum.

Activity associated with carcinoma of the prostate is increased by an increase in androgens, or male hormones, of that particular body. Hence it was reasoned that to control this activity one must either eliminate the chief source of the male hormone of that body or use something which tends to neutralize its effect. In the first instance castration would eliminate the source of male hormone production in the male, not entirely but almost so. It is not surprising that this operation has had the effect that the original experimenters had anticipated and that as a result many fine clinical responses are being obtained by castration in cases of hopeless carcinoma of the prostate.

A less dramatic and obviously less complete method of doing the same thing would be irradiation of the testicles to reduce the elimination of androgenic substance.

For the purpose of neutralizing androgen without disturbing the source of its formation, application of estrogenic substance is used. Accordingly, administration of diethylstilbestrol (an estrogenic substance), when the drug used in the proper dosage, has a tendency to a lesser degree than the other two procedures to reduce activity of carcinoma of the prostate; it tends to decrease progress and, above all, has a clinical effect on the control of local pain. It is for this purpose that diethylstilbestrol is chiefly used by physicians who have had any important experience with any of the methods. Diethylstilbestrol should be given in 1 mg. doses, three times a day, and the dose should be gradually decreased after tolerance has been established to the smallest dose sufficient to keep up the necessary response. Patients have been kept for long periods on a regimen of 0.5 mg. twice a day after having started with 3 mg. a day and having the dose gradually decreased. Clinical evidence of tolerance to this drug is gynecomastia, the degree of which determines the dose. Medication should not be continued in full doses once this symptom has appeared but should be kept just under the level necessary to produce enlargement and tenderness of the breasts.

LICHEN PLANUS OF MOUTH

To the Editor:—**Please let me know if there is any cure for lichen planus of the mouth. What is the treatment for this condition?**
David Warshaw, M.D., New York.

ANSWER.—Lichen planus of the mouth, especially when the lesions are superficial, usually responds to the same type of general therapy as is used in lichen planus elsewhere. Treatment should consist of mental and physical rest and the use of arsenic, which may be given as solution of potassium arsenite (Fowler's solution) in increasing doses, or as the Asiatic pill 1/16 to 1/32 grain (0.004 to 0.002 Gm.) two or three times daily. The patient must be carefully watched for symptoms of arsenical poisoning. Mercury (0.008 to 0.01 Gm.) yellow mercurous iodide, 1/8 to 1/6 grain may also be used by mouth after each meal or by intramuscular injection in doses of ⅛ to ¼ grain (0.008 to 0.016 Gm.) every other day. Bismuth in oil intramuscularly 0.2 Gm. weekly is also effective. The patient must be carefully observed for evidence of stomatitis or renal irritation. For patients with subjective sensations, bland mouth washes may be used, and there should be careful attention to mouth hygiene and removal of infected foci. The use of vitamin B complex capsules of high potency is also of value in the treatment of lichen planus. In some cases, especially when hypertrophic papules are present, it may be necessary, in order to secure complete effacement of the papules, to treat them locally by "dotting" with the fine pointed cautery. Roentgen rays in fractional doses (in trained hands) are also of value in the resistant cases.

HEART AND CHEST SOUNDS

To the Editor:—**I am interested in the physical interpretations of heart and chest sounds. 1. I should like to know what the wave frequency of normal heart tones generally is. Apparently they fall in the lower limits of cycles, but I would appreciate being informed whether there have been any studies made of the range and the results of such studies? 2. I would also appreciate any available information on chest sounds and the wave range in which they fall.** **M.D., Milwaukee.**

ANSWER.—Vibrations normally arising within the chest, in both audible and subaudible frequency ranges, are produced by movements of the lungs and the wall of the chest, movements of air within the lungs, contractions of cardiac and respiratory muscles, the action of the cardiac valves and the motion of the blood in the heart and large blood vessels. The chest sounds actually heard on auscultation, however, are determined by the transmission losses and distortion occurring in the air spaces and tissues of the chest and in the stethoscope or other instrument used and by the varying response of the human ear to different frequencies of sound waves. It is not sufficiently appreciated that the instrument used for auscultation, as well as the human ear itself, modifies the true nature of the sounds produced in the chest.

The results obtained by a number of investigators have shown that the frequency range encompassed by the normal heart sounds extends from 5 or 10 cycles per second in the subaudible region up into the audible range to a little more than 100 cycles per second. Frequency components of the normal heart sounds above this level are negligible. Cardiac murmurs, however, extend up to 650 cycles per second, with occasional small components as high as 1,000 cycles per second. Other chest vibrations and sounds extend from less than 5 up to about 1,000 cycles per sceond.

Further information on heart and chest sounds may be found in the following articles:

Mannheimer, Edgar: Calibrated Phonocardiography, *Am. Heart J.* **21**: 151 (Feb.) 1941.

Rappaport, M. B., and Sprague, H. B.: Physiologic and Physical Laws That Govern Auscultation, and Their Clinical Application, ibid. **21**: 257 (March) 1941.

TONSILLECTOMY FOR ACUTE NEPHRITIS

To the Editor:—**What is the status of tonsillectomy for chronic tonsillitis during the course of an acute hemorrhagic nephritis? A man aged 36 had acute nephritis following mild scarlet fever. He was treated conservatively for six weeks with improvement, but there was still evidence of red blood cells and traces of albumin in the urine. He was seen at a midwestern clinic, and at that time albumin and casts with a few red blood cells were still present. This was two months after the onset. Tonsillectomy was performed for "badly infected tonsils." There had been no history of quinsy; there had been infrequent sore throat of moderate severity preceding the onset of nephritis. Tonsillectomy during active renal inflammation seems contrary to what I was told in medical school or to all the reading I have done since.** **M.D., Montana.**

[This question was referred to two internists, whose respective replies follow.—ED.]

ANSWER 1.—The removal of tonsils, even though infected, during the active course of hemorrhagic nephritis is a procedure open to question and in a great majority of instances is not recommended. This type of nephritis follows or coincides with streptococcic infection in a high percentage of cases. During the active stage, as evidenced by red blood cells and albumin in the urine, the probability of stirring into reactivity a subsiding source of infection with consequent fresh activity of the renal lesion must be considered.

The wisest course would be to exercise patience until the disease has reached a latent stage, when sources of infection

can then be attacked. In this respect two further considerations must be remembered: removal of focal infection rarely helps in the chronic stage of hemorrhagic nephritis, and the fact that the patient in consideration had had no quinsy does not preclude badly infected tonsils.

ANSWER 2.—Several aspects are involved in the question of tonsillectomy for acute glomerulonephritis. The first of these is the relation of infected tonsils to the etiology of acute nephritis. There is no doubt concerning the high incidence and great importance of beta hemolytic streptococcus infections of the tonsils and adjacent tissues of the nasopharynx in the initiation of acute renal inflammation (Longcope, W. T.: Pathogenesis of Glomerular Nephritis, *Bull. Johns Hopkins Hosp.* **45**:335 [Dec.] 1929). Futhermore, the persistence of acute or subacute nephritis and the occurrence of exacerbations of the disease in the early stages are definitely associated with residual or renewed hemolytic streptococcus infection of the upper respiratory tract, including the tonsils (Winkenwerder, W. L.; McLeod, Neil, and Baker, Myles: Infection and Hemorrhagic Nephritis, *Arch. Int. Med.* **56**:297 [Aug.] 1935). Therefore, early removal of infected tonsils is theoretically indicated. However, actual experience has shown that recovery from acute glomerulonephritis takes place in the vast majority of children and to a lesser degree in adults without any relation to tonsillectomy or other surgical eradication of infected foci. Nor does tonsillectomy appreciably reduce the incidence of exacerbations or prevent the progress of activity in unhealed acute nephritis (Illingworth, R. S.: Tonsillectomy and Nephritis of Childhood, *Lancet* **2**:1013 [Nov. 11] 1939). It is also established that, once recovery has occurred from acute nephritis, further renal inflammation of this type practically never develops in spite of repeated hemolytic streptococcus infections of the same type that led to the original nephritis (Loeb, Emily N.; Lyttle, John D.; Seegal, David, and Jost, Elizabeth L.: Permanence of Recovery in Acute Glomerulonephritis, *J. Clin. Investigation* **17**:623 [Sept.] 1938). The conclusion is inescapable that the decision to remove the tonsils in a patient with acute nephritis should be based largely on general hygienic and local reasons rather than on the theory of favorably influencing the renal disease. The time chosen for the operation should depend on the patient's general and renal status. In the case described there can be no criticism in view of the lapse of two months from the onset of the nephritis and the definite subsidence of the inflammatory process. Careful studies have shown that tonsillectomy during the course of acute nephritis may cause transient increase in proteinuria and hematuria but no reduction in renal function nor any permanent damage (Page, I. H., and Alving, Alf: Effect of Nasopharyngeal Operations on Renal Function, *J. Clin. Investigation* **11**:1037 [Sept.] 1932). Finally, it should be noted that it is extremely unusual for chronic nephritis to follow an acute nephritis secondary to scarlet fever. Therefore, complete recovery is highly probable in this case.

BICHLOROACETIC ACID FOR SKIN LESIONS

To the Editor:—**What is the safety of bichloroacetic acid (Bichloracetic Acid Kahlenberg, Kahlenberg Laboratories, Two Rivers, Wis.) for the removal of various types of cutaneous lesions? Is this method of treating certain cutaneous lesions by escharotics generally accepted?**

Stanley B. Weld, M.D., Hartford, Conn.

ANSWER.—Bichloroacetic acid is one of the three chloroacetic acids. The bichloroacetic and monochloroacetic are said to be stronger than the trichloroacetic acid, but most clinical experience has been with trichloroacetic acid. When these are used as topical applications the main danger rises in their local effect and not in the possibility of systemic absorption. This, of course, presumes that they are used on relatively small areas. They have a limited use for the removal of certain benign types of cutaneous blemishes. The ones most commonly treated with these agents are xanthelasma, warts, possibly papillomas and certain varieties of nevi. In the last two instances extreme care must be exercised that a correct diagnosis has been made and, if there is any doubt, such substances should not be used until a biopsy has been performed. In the use of these acids for the treatment of xanthelasma, care must be taken that they are not used too vigorously lest there be cicatricial contracture with resulting ectropion. In general these agents should not be used on persons who have keloidal tendencies, as all chemical escharotics are more apt to produce keloids than surgery or electrodesiccation. As far as is known, the Kahlenberg Laboratories market only two preparations, the other being a colloidal gold preparation which is advocated by the promoters for the treatment of cancer. The Council on Pharmacy and Chemistry has indicated on several occasions in the pages of THE JOURNAL that there is inadequate evidence on which to base a claim for the usefulness of this preparation in the treatment of cancer.

POSSIBLE LESION OF SPINAL CORD

To the Editor:—**A man aged 48 has been suffering from asthma since childhood. He now finds complete relief through inhalations of an epinephrine spray. He has always been a heavy smoker and drinker. About a year ago he began to complain of numbness in his left foot extending up to the knee and over to the right side over the whole of the lower part of the abdomen. There was a sensation as if a rope were tied around his waist, and his stomach felt as if filled with concrete. Physical examination revealed a moderate emphysema due to his asthma. The blood pressure was 160 systolic and 96 diastolic, the blood picture was normal. The stomach contents showed free hydrochloric acid in abundance and some occult blood in the final specimens. Roentgenograms of the skull and spine appeared normal. Neurologic examination showed an unsteady gait and a mild degree of rombergism. There was definite ataxia of both lower limbs and a degree of hypalgesia over both legs up to the umbilical level, with almost complete loss in the perirectal region completing a saddle distribution about the rectum, and yet with this the sensation over the scrotum and penis was normal. His reflexes were hypoactive but there were no pathologic reflexes. There was also a diminution of touch sensation over the lower extremities, but position sense was normal. The pupils were regular and equal and they reacted to light, and his fundal vessels were mildly sclerotic. Lumbar puncture showed a pressure of 150 increased to 360 on jugular compression; there was a rapid rise and fall; there was no block. The white cell count was 24. The Pandy test was positive; total proteins were 80; the Wassermann reaction was negative; the colloidal gold 00232000. A diagnosis of avitaminosis due to overindulgence in alcohol was made and he was given a high vitamin diet with large doses of B_1 and B complex intramuscularly and by mouth. He seemed to be improving under this therapy. Of late, however, he has been complaining of numbness and inability to walk without having to stop and rest. I am wondering whether this is not due to arterial spasm of the legs, and if the epinephrine spray and tobacco are in part responsible for his condition.**

M.D., New York.

ANSWER.—In spite of the excellent account and the extensive tests made, one cannot do more than to suggest diagnostic possibilities. Epinephrine and tobacco may well cause spasm and narrowing but would not account for the cell and protein increase in the spinal fluid or for the fact that the symptoms and signs are confined to the lower half of the body. One must suspect the existence of a lesion either of the spinal cord itself or of its roots and membranes. Practically speaking one may be dealing with a form of meningomyelitis, spiral arachnoiditis or spinal cord tumor. If the condition of the legs grows worse and especially if sphincter disturbances or localized pain should develop, it would be justifiable to inject air or iodized oil, as there may be some deformity of localizing value even in the absence of spinal block. If signs of tumor should become quite definite it would, of course, become justifiable to do an exploratory laminectomy without air or injection of iodized oil.

SUBMINIMAL REACTIVE DOSE

To the Editor:—**What term do you suggest to indicate an amount of either toxin or a suspension of micro-organisms that just fails to produce signs of the respective disease; in other words, a term analogous to "sublethal dose"?**

M.D., Buffalo.

ANSWER.—A variety of terms might be used, such as subinfective dose, subtoxic dose or subminimal reactive dose (as in the Römer reaction). Experimentally the assay of toxicity or infectivity takes the form of a determination of the probability of an observable reaction expressed as a function of the dose by the use of the formula of inverse probability. The end point in the determination of a minimal dose is that at which half the animals show an observable reaction, while half do not; a subminimal dose would necessarily be defined in terms of a similar ratio or as a probability obtained by extrapolation. Standard terms apply to minimal amounts necessary to produce the reaction, since a maximum which will not produce a reaction is inferential rather than directly determinable. In one instance, that of the Limes Nul or L_o dose of diphtheria toxin, the definition is in terms of no observed reaction; the largest amount of diphtheria toxin that, when mixed with 1 unit of antitoxin, will, on the average [sic] give no observable reaction when injected subcutaneously in 250 Gm. guinea pigs. In practice, however, this amount is usually recorded as that dose which, tested in this way, produces a minimal local edema.

LIQUID PETROLATUM AND INTESTINAL IRRITATION

To the Editor:—**Are there any postmortem reports on the gross and microscopic condition of the intestine in frequent users of liquid petrolatum? It would be interesting to know how they compare with those of nonusers.**

E. P. S. Miller, M.D., Chicago.

ANSWER.—Liquid petrolatum is thought to be a definite irritant to the intestinal mucosa. So far there have been no reports on histologic findings in postmortem examinations when the patient had taken liquid petrolatum habitually. Some observers feel that histopathologic changes are to be expected. At the

1941 meeting of the American Medical Association Morgan exhibited a photograph of the rectal mucosa of a patient who died of pneumonia. This patient was known to have taken liquid petrolatum habitually for a long time. The specimen was thoroughly washed with physiologic solution of sodium chloride and then immersed in Kaiserling's solution for two days. A photograph was then taken of the mucosa of the rectum, which had been cut open and pinned out on a board. The epithelium was still coated with dirty, oily feces.

It has been claimed that the presence of the tenacious oil might induce hemorrhage in rectal wounds. In the light of more recent investigations, however, the tendency to bleed may be more closely related to vitamin K (oil soluble) deficiency and interference with prothrombin concentration, which has been so well demonstrated in women who take liquid petrolatum during the latter months of pregnancy.

FUNCTIONAL STOMACH AND INTESTINAL DISTRESS

To the Editor:—**A patient not of the nervous type complains of feeling full and uncomfortable after a small meal. The discomfort lasts for about three hours. Roentgenograms of the gastrointestinal tract do not reveal any evidence of organic disease, but they do show hyperactivity of the stomach and the intestine with spasticity of the entire colon. Examination after a barium sulfate enema shows no abnormalities except evidence of spasticity. What treatment may be tried to relieve the feeling of fulness after eating and what drugs may be used to slow up the intestine and relieve the spasticity?** M.D., New York.

ANSWER.—The symptoms and data given suggest, in the absence of an organic pathologic condition of any kind, a functional disturbance of the digestive tract. Various terms have been applied to this symptom complex, such as irritable bowel, functional bowel distress and irritable colon. Other terms, such as mucous colitis, spastic colitis and cathartic colitis, emphasize a predominant characteristic of the syndrome in a particular individual. When gastric symptoms predominate, many physicians prefer the designation gastric neurosis. Fundamentally the nature of the disturbance is apparently an unusual or abnormal irritability of the gastrointestinal tract resulting in a disruption of the normal peristaltic rhythm. This hyperirritability apparently may come about in either of two ways or from combination of the two. The first of these is the effect of irritants within the lumen of the digestive tract, as that from the continued ingestion of laxatives or irritating foods. The second is the nervous state of the patient. A real "irritable bowel" or "gastric neurosis" is thought by many to be dependent on a preexistent nervous condition, such as may result from severe emotional stress, particularly fear.

Adequate therapy, therefore, depends primarily on the correct diagnosis and on a correct evaluation of the patient as an individual. This involves an appraisal of physical, social and psychic factors. These problems are discussed in considerable detail in an article by Palmer (The Functional Bowel, *M. Clin. North America* **22**:139 [Jan.] 1938). Reassurance and superficial psychotherapy may do much to decrease hyperirritability in the gastrointestinal tract when this is due to a functional disturbance. Cathartics should be avoided. The principle of dietary management is that of attempting to find a diet which will produce firm, formed stools. The details of such diets can be found in the reference cited.

Pharmacologic therapy is useful chiefly as an adjunct to the therapy outlined. Tincture of belladonna in doses of 10 drops taken four times daily is of value. Taking sedatives, such as bromides or phenobarbital, either in small divided doses several times daily or in a single larger dose at night tends to insure greater physical and mental rest, which is perhaps one of the most important aims in the treatment of this condition.

THICKNESS OF SKULL OF NEGROES AND WHITE PERSONS

To the Editor:—**I would appreciate an answer to the following questions: In general are Negro skulls thicker than those of white persons? What effect, if any, does thickness of the skull have on a boxer's ability to bear head blows or "knockout" blows?**

S. B. Kleinman, M.D., Alexandria, La.

ANSWER.—The vault bones (frontal, parietals, occipital) of the Negro skull are, on the average, a millimeter or so thicker than those of the white skull. The range of variation in the two groups, however, is so great that there is considerable overlapping. A "knockout" punch on the skull, accompanied by a slight concussion caused by raising intracranial pressure, is quite improbable. The fighters dodge and weave so that direct head blows are rare; most such blows are glancing. A true knockout "on the button" is delivered on the chin. The blow travels along the body of the mandible to contact of mandibular condyle with the temporal bone, in the mandibular fossa, where bone is relatively thin.

ERGOT POISONING OR WORRY

To the Editor:—**Two months ago an unmarried woman aged 26 stated that five months previously she had been given 1½ ounces of ergot, which quantity she had taken in divided doses over a period of twenty-four hours. Since that time she has complained of "crawlers" under the skin, tingling of the hands and feet, stasis of the blood in the hands and feet, enlargement of the superficial veins and swelling of the face and neck; in fact she has all the nervous manifestations of ergot poisoning. The ergot did not produce the abortion. She claims it was produced by sitting over "hot onions" for three days. Are there any cases on record in which this small amount of ergot has produced symptoms which have lasted as long as eight months? The woman has read medical literature on ergot poisoning, and I am of the opinion that this has produced all her trouble but I want to give her the benefit of the doubt.** M.D., Ohio.

ANSWER.—The preparation of ergot used was probably the fluidextract, which is most commonly employed. The official dose is 2 cc., although much larger doses are frequently given. If this was the preparation taken, the patient received 45 cc., or about twenty-two official doses in the course of twenty-four hours. No mention is made of any of the immediate results in ergot poisoning, such as nausea, vomiting or diarrhea. Ergot, although somewhat irregularly absorbed from the gastrointestinal tract, usually gives a prompt response. It acts in from fifteen to thirty minutes and the action lasts about a half hour. Recovery from severe ergot poisoning may take several days. As far as can be ascertained, there are no records of a similar quantity of ergot exerting its effects over a period of eight months. As suggested by the correspondent, the present complaints are in all probability due to her worrying about having used the drug.

SILICON AND SILICON HALOGENS

To the Editor:—**What information can you furnish regarding industrial poisoning by silicon gas?** R. S. Barry, M.D., Niagara Falls, N. Y.

ANSWER.—Air borne suspensions of the element silicon might be construed as gaseous in the fume liberated on electric furnace treatment. The fine particles of such fumes collect as long cobweb-like streamers in flues, rafters and the like. Animal injection experiments have demonstrated that silicon in this form is inert and incapable of producing either acute or chronic tissue changes other than phagocytosis. The same result was observed with coarser particles 1 to 3 microns in diameter. Silicon tetrafluoride is a colorless, irritating gas. The tetrachloride has a suffocating odor and is used in the preparation of smoke screens. Several other halogen compounds are known. Of the organic silicates that might be inhaled as vapors, the ethyl silicate has been found to be highly toxic on injection into animals.

APHONIA IN TELEPHONE OPERATORS

To the Editor:—**It is stated that telephone operators lose the use of their voice after about three years, and that they especially notice difficulty in singing. The constant monotone of the voice was suggested as a possible disturbing factor. I am unaware of any literature bearing directly on the voice problems of telephone operators. Could you tell me if the condition described is common in such an occupation and furnish references for further study?**

Lloyd K. Rosenvold, M.D., Los Angeles.

ANSWER.—Loss of voice does not commonly occur as an occupational disability in telephone operators. Careful inquiry into this question discloses that there is no significant loss of voice after three years or more of service. Reference to the monotone as being a possible cause of this disability is open to question. The operators are trained to avoid a monotonous voice, to vary their speech and to use as pleasant a voice as possible. No reference has been found in the literature to this supposed disability in telephone operators. C. H. Watson, medical director of the American Telephone and Telegraph Company has said: "Long-continued active use of the voice over difficult circuits might result in a certain amount of hoarseness and if a person is a singer, after such a period of this work there might be some difficulty in embarking on a period of singing. However, I cannot see that telephone operating itself is an industrial hazard of this type and instances of this sort do not occur frequently enough to establish it as an object of concern for the industry."

OBSTIPATION IN MULTIPLE SCLEROSIS

To the Editor:—A woman aged 27, who had acute multiple sclerosis, is having considerable urinary and bowel retention. Her urinary retention is overcome after considerable straining, but the bowel retention is the biggest problem. Her general therapy has consisted of alpha-tocopherol, thiamine hydrochloride and quinine hydrochloride. She goes two to five days without a bowel movement, at which time enemas are given. The enemas consist of soapsuds, plain physiologic solution of sodium chloride, glycerin and magnesium sulfate. The results from any one of these enemas are poor; at times she does not even expel the liquid inserted. Further, cathartics by mouth, including castor oil, are ineffectual. Any suggestions you can offer will be greatly appreciated.

M.D., Michigan.

ANSWER.—The urinary and bowel difficulties in multiple sclerosis may at times be a serious problem. In many instances the already existing problem is made worse by the giving of numerous medicinal remedies as well as enemas. There is no drug known that will directly affect the bowel as it exists in multiple sclerosis. Under such circumstances one is dealing usually with a diminished motor stimulus resulting in either obstipation or constipation. The following is suggested: A diet consisting of 1½ pounds of liver two or three times a week, with eggs, milk, fresh vegetables and fruit. Cereals should not be used. Light abdominal massage in the rectal direction of the colon should be done daily for three to five minutes. Liquid petrolatum in doses of 1 ounce (30 cc.) should be given every night. No cathartics, laxatives or enemas should be given at any time.

NITRATES AND SEXUAL POTENCY

To the Editor:—A robust man aged 42 complains of the recent loss of sexual power accompanied with attacks of palpitation of the heart. He believes that he may be being fed potassium nitrate and wishes to know if there is any test possible to determine this. A careful physical check-up reveals no cause of his present condition excepting perhaps a moderately chronic specific urethritis, which has been controlled recently by sulfathiazole.

M.D., Indiana.

ANSWER.—It has been shown that potassium nitrate in large amounts may have a slight depressant action. But to obtain any anaphrodisiac action, such large quantities would be required that an extremely violent gastroenteritis would result. This, together with the associated pain, vomiting and frequently bloody stools would certainly preclude the use of potassium nitrate in any sizable dosage.

Potassium nitrate is readily absorbed and its excretion in the urine is almost quantitative. The usual chemical tests for the potassium ion and the nitrate ion could be made in urine, bearing in mind that normal urine contains from 0.1 to 0.4 per cent of potassium nitrate.

The patient may have developed a sexual neurosis because of his specific urethritis. There is also the possibility that the sulfathiazole has temporarily depressed his sexual powers. It is known to do so during the period of treatment, but as far as can be learned such action does not continue after the drug has been discontinued.

INTRACUTANEOUS ALLERGIC TESTING

To the Editor:—I have received an advertisement of a new intracutaneous method of allergic testing from Multifit, Inc. Is this approved or not by good allergists?

Frank Howard Richardson, M.D., Black Mountain, N. C.

ANSWER.—The technic for intracutaneous testing was described by Rappaport and Hecht in 1936 (Vial Syringe Technic for Intracutaneous Tests, *J. Allergy* **7**:161 [March] 1936). The Multifit "Bartos" Cartridge System consists in a modification of the "carpule" used by dentists as a container for local anesthetics. There is nothing revolutionary in this method of testing. It is merely the substitution of the "carpule" for the tuberculin syringe as a container for the allergen. Its convenience is in a large, rather than a small, practice. One possible objection is the greater difficulty of controlling the size of the wheal as compared with the ease with which this can be done with the tuberculin syringe. This, however, can be satisfactorily accomplished after considerable experience. The main objection to the claims in the advertisement is that the emphasis is on the container (the cartridge, as it is called), rather than on the allergen inside the container. Nothing is said of the quality of the testing materials. Granted that the physician has experience in the technic of doing and interpreting the intracutaneous tests, the reliability and standardization of the allergens, rather than the syringe used, are the important elements for successful work.

COFFEE AND TEA IN GOUT

To the Editor:—Are coffee and tea permissible in gout? Opinion seems to be at variance on this point. Most of the textbooks emphatically state that they contain purine bodies. Hench, however, in The Journal, Feb. 8, 1941, page 453, states that "coffee and tea are permissible, being methylated purines which do not form uric acid."

J. Lyman Hurlbut, M.D., Flushing, N. Y.

ANSWER.—Coffee and tea contain methylated purines, but whether these contribute to increased formation of uric acid in the blood of man is an open question. The increased urinary excretion of uric acid after coffee or tea, as claimed by some, does not prove that the methylated purines have been converted into uric acid because the diuretic action of coffee or tea may have been responsible. Some well known authorities state that caffeine is not converted into uric acid in man. Others state that only a small percentage is demethylated. The entire problem has not been sufficiently investigated by the newer methods to answer the question satisfactorily. It would seem wise to advise patients with gout to use coffee and tea moderately, if at all.

DIET AND CIRRHOSIS OF LIVER

To the Editor:—I have read with interest the editorial on "Diet and Cirrhosis of the Liver" in the Nov. 1, 1941 issue of The Journal. As a resident in medicine I treated many cases of hepatic cirrhosis and adhered to the high carbohydrate, low protein, low fat diet suggested by Albert Snell of the Mayo Clinic. This diet is discussed in the latest treatises on therapeutics. Snell's objections to a high protein diet are that: 1. A greater load is thrown on the liver in that a larger amount of deamination must be done than would be necessitated with a low protein diet. 2. Bile salt production is increased on a high protein diet; the latter is disadvantageous if any degree of hepatocellular jaundice exists. I am familiar with Dr. Ravdin's work on the protective effect of a high protein diet preoperatively in promoting better wound healing in cases in which a predisposition to hypoproteinemia exists. However, it is established that the reversed albumin-globulin ratio frequently encountered in hepatic cirrhosis is entirely uninfluenced by dietary protein. I would appreciate any comments on this problem.

Robert G. Lehman, M.D., Lieut., M. C., U. S. N. R., San Diego, Calif.

ANSWER.—The effect of a high protein diet in preventing or retarding the experimental production of cirrhosis of the liver, as considered in the editorial, has no relation to the problem of the treatment of cirrhosis after the clinical or experimental condition had been established. The editorial suggested the value of protein in the detoxication of poisons used to produce experimental liver damage; this query deals with the effect of added protein on an already diseased liver. The editorial does not discuss the latter problem.

SULFONAMIDE COMPOUNDS PROPHYLACTICALLY

To the Editor:—Have any controlled experiments been reported on the ingestion of sulfathiazole or other sulfonamide drugs as a preventive of infection, as for gonorrhea? Has any army utilized chemotherapeutics for this purpose? Is there any objection pharmacologically to adding tablets of sulfathiazole to the list of mechanical and topical applications for the prevention of gonorrhea after exposure?

Herman Goodman, M.D., New York.

ANSWER.—As far as is known no controlled experiments dealing with the use of a sulfonamide compound as a preventive in gonorrhea have been carried out. The armed forces of the United States have not given official approval to the use of a sulfonamide compound as a prophylactic, nor have reports on the subject originating in foreign military establishments been found. One of the principal requisites of a prophylactic agent is that it may be repeatedly and frequently used without injury to the user. As the prolonged and indiscriminate use of sulfathiazole may lead to troublesome toxicity it would seem to be inadvisable to recommend its use until such time as its prophylactic efficiency may have been determined.

HAIR AND PERMANENT WAVE

To the Editor:—A woman aged 27, whose physical examination is entirely negative, complains that her hair is naturally straight and that although she has had many permanent waves they last only until the hair is wet. A so-called finger wave lasts only a few hours. Can you suggest any treatment for this or the cause for it?

M.D., Wisconsin.

ANSWER.—This is a common trouble, apparently an inherent difficulty which the hairdressers are unable to overcome. The difficulty lies in the nature of the hair and the limitations of the curling process, not in any constitutional peculiarity of the patient.